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Understanding Technological Capabilities in the Kenyan Textile and Apparel Sector:
A Patchwork Market of Tailors, Fashion Designers, and Stylists

Lauren Ann Foley (Engels)

Thesis submitted for the degree of Doctor of Philosophy in African Studies
2022

Centre of African Studies
School of Social and Political Science
University of Edinburgh
Declaration

I, Lauren Ann Foley (Engels), declare that this thesis is my own research, and that no part of this thesis has not been submitted for any other degree, diploma, or professional qualification. Wherever contributions of others are involved, I indicated this, with due reference to the literature.

May 2022
Abstract

This research project examines the extent to which the entrepreneurs in the Kenyan cities of Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities required to enter and be competitive in the local market. I argue that the entrepreneurs extend the production process of the global textile and apparel value chain into the local market, and that the accumulation of technological capabilities shapes that production process. The ways in which the entrepreneurs navigate and negotiate the processes and structures of the global textile and apparel value chain in order to accumulate technological capabilities is able to explain the construction of knowledge in the local market.

The primary research question that motivates the research project is: How do the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market? To answer that question, I adopt the technological capability (TC) approach in combination with the global production network (GPN) approach, and draw on scholarship in African studies, global value chains, international development, technological capabilities, and textile and apparel production. The TC approach captures all of the activities that the entrepreneurs assume in order to accumulate technological capabilities, while the GPN approach encompasses all of the participants in the local market, especially those considered outside of the value chain. Technological capabilities is a concept that refers to the experience, knowledge, and skills that an individual or an organization accumulates over a period of time.

To provide a more nuanced assessment, I connect the scholarship on the global textile and apparel value chain and technological capabilities, draw on the data from 130 in-depth interviews, and put the local market at the center of the analysis. I consider all of the entrepreneurs in the local market as agents of change who act as catalysts for economic growth and industrial development. This is a significant contribution to the literature that gives a greater prominence to the entrepreneurs who produce for the global market. The local market is composed of entrepreneurs – tailors, fashion designers, and stylists – that produce and reproduce clothes for the local consumer.
The entrepreneurs participate in activities that extend from the global production system in order to expand their skill set and enhance their performance in the local market. For example, a fashion designer participates in an in-house training program at an Exporting Processing Zone (EPZ), which is the part of the global textile and apparel value chain that produces the final product. By participating in the in-house training program, the fashion designer is able to acquire skills in production, such as pattern drafting and garment construction. Or a tailor purchases a t-shirt from the second-hand clothing market, which is the part of the global textile and apparel value chain that resells the final product. By shopping at the second-hand clothing market, the tailor is able to acquire skills in investment, such as project preparation and sourcing time. I explain the ways in which the entrepreneurs navigate and negotiate the processes and structures of the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. My exploration of this pattern of navigation and negotiation reveals how the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process. In doing so, the research makes a significant contribution to the literature that currently diminishes the role of the construction of knowledge in the local market.
Acknowledgements

Words fail to describe my sincere gratitude for the guidance and supervision of Hazel Gray and Thomas Molony over the past four years. Their insights have been invaluable. In addition, I would like to express gratitude to the Leverhulme Trust for funding the Ph.D., including the research trips to Mombasa (2019) and Nairobi (2020).

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Last but not least, I would not have been able to finish the Ph.D. without the support of my family and friends. In particular, I would like to thank my mother, Nancy Engels, for all of the edits. Thank you for reading each and every single word (no exaggeration). I could not have completed the thesis without you. I would like to give a hug and a kiss to Ava Muhr, Miriam Pahl, and Taryn Cornell for each editing at least one chapter. I know that this was no easy feat. Thank you to my brother-in-law, Gregory Potter, for the conversation that led to the creation of the global production network example, and my father-in-law, Raymond Foley, for reading and rereading random paragraphs. And I would like to thank my husband, Tyler Foley, for all of the love and support, and for patiently teaching me the secrets of Excel. I apologize for all of the late nights. I dedicate the final document to them.
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<td>African Development Bank</td>
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<tr>
<td>AGOA</td>
<td>African Growth and Opportunity Act</td>
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<td>AKT</td>
<td>Association of Kenyan Tailors</td>
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<td>ATC</td>
<td>Agreement on Textiles and Clothing</td>
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<td>AU</td>
<td>African Union</td>
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<td>BBC</td>
<td>Bottom Billion Capitalism</td>
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<td>BIEA</td>
<td>British Institute in Eastern Africa</td>
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<td>BoP</td>
<td>Bottom of Pyramid</td>
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<td>BRICS</td>
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<td>CITC</td>
<td>Christian Industrial Training Center</td>
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<tr>
<td>CMT</td>
<td>Cut, Make, and Trim</td>
</tr>
<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<tr>
<td>EAC</td>
<td>East African Community</td>
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<tr>
<td>EOI</td>
<td>Export-Oriented Industrialization</td>
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<td>EPZ</td>
<td>Exporting Processing Zone</td>
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<td>Export Processing Zones Authority</td>
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<td>ESRC</td>
<td>Economic and Social Research Council</td>
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<td>EU</td>
<td>European Union</td>
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<td>F2F</td>
<td>Fibre to Fashion</td>
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<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>FPP</td>
<td>Full Production Package</td>
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<td>GCC</td>
<td>Global Commodity Chain</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GOK</td>
<td>Government of Kenya</td>
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<td>GPN</td>
<td>Global Production Network</td>
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<td>GVC</td>
<td>Global Value Chain</td>
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<tr>
<td>HC</td>
<td>Harmonized Commodity Description and Coding System</td>
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<td>ICT</td>
<td>Information Communication Technology</td>
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<tr>
<td>IDS</td>
<td>Institute for Development Studies</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>IGO</td>
<td>Intergovernmental Organization</td>
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<td>International Labor Organization</td>
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<td>International Monetary Fund</td>
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<td>International Trade Commission</td>
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<td>Kenya Fashion Council</td>
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<td>KICOMI</td>
<td>Kisumu Cotton Mills</td>
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<td>Kenya Industrial Estates</td>
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<td>KITP</td>
<td>Kenya Industrial Transformation Program</td>
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<td>Kenya Revenue Authority</td>
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<td>kWh</td>
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<td>LDC</td>
<td>Least-Developed Country</td>
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<td>MFA</td>
<td>Multi-Fiber Agreement</td>
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<td>Mount Kenya Textile</td>
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<td>MTTI</td>
<td>Mombasa Technical Training Institute</td>
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<td>MUB</td>
<td>Manufacturing Under Bond</td>
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<tr>
<td>MVA</td>
<td>Manufacturing Value Added</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NITA</td>
<td>National Industrial Training Authority</td>
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<tr>
<td>NVCET</td>
<td>National Vocational Certificate in Education and Training</td>
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<tr>
<td>ODM</td>
<td>Original Design Manufacturing</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Design</td>
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<tr>
<td>RIAT</td>
<td>Ramogi Institute of Advance Technology</td>
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<tr>
<td>RIVATEX</td>
<td>Rift Valley Textiles</td>
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<td>SAP</td>
<td>Structural Adjustment Program</td>
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<td>Acronym</td>
<td>Full Form</td>
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<td>SMART</td>
<td>Secondary Materials and Recycled Textiles Association</td>
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<td>SME</td>
<td>Small- and Medium-Sized Enterprises</td>
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<td>TC</td>
<td>Technological Capability Approach</td>
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<td>TDB</td>
<td>Trade and Development Bank</td>
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<td>TTWU</td>
<td>Tailors and Textiles Workers Union</td>
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<td>TVET</td>
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<td>United Nations Development Program</td>
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<td>UNEP</td>
<td>United Nations Environment Program</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>USD</td>
<td>United States Dollar</td>
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<td>USTR</td>
<td>United States Trade Representative</td>
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<td>VAT</td>
<td>Value Added Tax</td>
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<td>World Trade Organization</td>
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Chapter 1: Introduction

Introduction to the Thesis

“The garment industry is the archetypal driver of early industrialization in the least-developed countries (LDCs), requiring relatively low levels of technology and an abundance of cheap labor” (Alam, Natsuda, 2016, p. 316).

The global textile and apparel value chain is worth more than 2 trillion United States Dollar (USD) per annum, a low-end estimate that is expected to double within the next decade (KAM, 2020; WTO, 2019). Therefore, it is not a surprise that the textile and apparel sector is considered a catalyst for economic growth and industrial development, especially for developing countries. Due to the labor-intensive and low initial investment characteristics, the sector absorbs a large number of low-skilled workers, increases foreign exchange income, and provides a base for advanced technological activities in other sectors (Brenton, Hoppe, 2007). The economic success of the Four Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan) serves as an example of the road to prosperity with the textile and apparel sector. The Four Asian Tigers used the sector as a starting point in the industrialization process, transitioning from a labor-intensive economy to a capital-intensive one (UNCTAD, 2017; Gereffi, Memedovic, 2003). Thus, the growing demand of textiles and apparel presents an opportunity for developing countries to enter and be competitive in the global textile and apparel value chain (Brenton, Hoppe, 2007).

In Kenya, the textile and apparel sector emerged from import substitution industrialization (ISI) strategies and evolved from a combination of trade liberalization and export-oriented industrialization (EOI) strategies. Despite the different (and at times opposite) theories on economic growth and industrial development, all of the strategies sought to strengthen the textile and apparel sector to the point of participation in the global textile and apparel value chain (CFI, 2021; Newman et. al., 2016; Ribeiro, 2016; Allaro, 2012; Kaldor, 1978). However, since independence, the textile and apparel sector has experienced a series of ups and downs with inconsistent “pendulum swings” of industrial policies (Chege et. al., 2014, p. 26). The success of the sector is not apparent, especially in comparison to the Four Asian Tigers.
That said, the success of the Kenyan textile and apparel sector relative to other African countries is substantial. While most other African countries do not have a viable sector to start with, Kenya is the fourth largest exporter of garments in Africa (Tyce, 2019b). The sector employs more than 98,000 individuals, or “17.5 percent of formal employment in manufacturing,” with the potential to create an additional 800,000 positions (USITC, 2009, p. 79). The Kenyan textile and apparel sector has the potential to establish a path for steady and sustainable economic growth and industrial development.

One phenomenon that coincides with the ups and downs of the textile and apparel sector is the importation of second-hand clothes (Frazer, 2008). The economic and social impacts of second-hand clothing imports are well-documented, describing either the extent to which the imports undermine local textile production or how the imports generate local employment opportunities (Baden, Barber, 2015; Brooks, Simon, 2012; Field, Schmidt, 2007; Ouvertes Project, 2005). However, the importation of second-hand clothes is not the sole reason for the stagnation of the textile and apparel sector. The textile and apparel sector has confronted a series of other challenges, such as the high costs of production in terms of electricity, infrastructure, interest rates, labor, resources, and technology (World Bank Group, 2015, p. 6).

The paradoxical nature of the second-hand clothing market is that the production process has come full circle. For example, Shona EPZ Limited in Athi River produces a t-shirt, that t-shirt is exported to H&M or Walmart in the United States of America (USA), and then that t-shirt returns to the second-hand clothing market in Mombasa or Nairobi. The t-shirt receives a “second life cycle” per se in the local market (Brooks, 2015, p. 34). However, this research project is not about the story of a t-shirt.

This research project is about the entrepreneurs in the local market (e.g., tailors, fashion designers, and stylists) who take and transform that second-hand t-shirt to meet the expectations and preferences of the local consumer. For example, a fashion designer who purchases a second-hand t-shirt and replaces the sleeves with kitenge (wax print). It is about the entrepreneurs who enhance their knowledge and expand their skill set over a period of time. It is about the entrepreneurs who participate in all of the stages of
the production system, and extend the global textile and apparel value chain into the local market.

This raises the principal question that motivates the research project: how do the local entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market?

**Introduction to the Chapter**

The primary purpose of the chapter is to provide a brief background of the Kenyan textile and apparel sector in order to set the stage for the rest of the thesis. I describe the development of the textile and apparel sector since independence, with special attention given to the transition from ISI strategies to the trade liberalization and EOI strategies. The ISI strategies enabled the textile and apparel sector to expand at a rapid rate, but that success was not sustainable (Bukachi et., al., 2019; Ngui et. al., 2016; Omolo, 2006); the trade liberalization strategies opened the economy up to international investment, but failed to encourage export-oriented activities (Kubania, 2018; Fukunishi, 2012); and the EOI strategies provided incentives to expand the production of exports, but that expansion stagnated in the last decade (Chege et. al., 2014).

The textile and apparel sector is at a crucial stage. On one hand, the sector is sizable, especially in terms of employment with 98,000 individuals in the formal sector and 75,000 individuals in the informal sector (USITC, 2009). On the other hand, the textile and apparel manufacturers confront a series of challenges, such as high input costs and competition from second-hand clothes, which impact their ability to operate at full capacity (OEC, 2019, World Bank Group, 2015). I explain that the future of the textile and apparel sector is vulnerable, in particular with the end of the preferential trade agreements.

Then, I trace the transformation of the local market – a sub-sector of the textile and apparel sector. The local market is composed of entrepreneurs (e.g., tailors, fashion designers, and stylists) that produce and reproduce merchandise for the local market. I contend that the entrepreneurs in the local market matured in the midst of the ISI, trade
liberalization, and EOI strategies. Unlike the textile and apparel manufacturers, the entrepreneurs adapted and pivoted in response to the “pendulum swings” of industrial policies (Chege et. al., 2014, p. 26). For example, instead of perceiving the importation of second-hand clothes as competition, the entrepreneurs enhanced their knowledge and expanded their skill set in order to respond to the local consumer demand (Wanduara, 2018). In doing so, the entrepreneurs became more and more versatile.

For the purpose of the research project, I put the local market and the entrepreneurs in the local market at the center of the analysis. I am interested in the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to acquire the essential knowledge and skill set to enter and be competitive in the local market. I end the chapter with an overview of the structure of the thesis. I explain the objectives of the research project, and provide an outline of each of the chapters.

The Textile and Apparel Sector

The History of the Textile and Apparel Sector

Following independence, the Government of Kenya (GOK) identified the production of textiles and apparel as essential to economic growth and industrial development (Imo, Maiyo, 2012; Mangieri, 2007; Omolo, 2006). This is because the textile and apparel sector provides opportunities for increased employment and poverty reduction. In order to reach that potential, the textile and apparel sector has undergone a series of phases from the period of transition and import substitution, to trade liberalization and export promotion. The purpose of the section is to provide a short overview of the manufacturing sector starting with the period right after independence.

In 1963, Kenya inherited a well-established textile and apparel sector from the British Colonial administration with more than 74 enterprises up-and-running (Imo, Maiyo, 2012); however, the private colonial ginners dominated the cotton sub-sector (Ikiara, Ndirangu, 2003, p. 11). Over the next decade, the government helped cooperative unions purchase the private ginnersies from the colonialists and invested in private apparel manufacturers (Ikiara, Ndirangu, 2003, p. 9). For example, the government established the Kenya Industrial Estates (KIE) program to support local micro-, small,
and medium enterprises (MSMEs) increase their capacity in manufacturing (Chege et. al., 2014, p. 3). In addition, the government adopted ISI strategies to protect and regulate the textile and apparel sector via exchange rate controls, high tariff barrier, import quotas, and subsidized loans (CFI, 2021; Wanduara, 2018, p. 76; Omolo, 2006, p. 148). For instance, the Import Substitution Scheme (ISS) subjected all imported fabric and clothing to high import tariffs (Bukachi et. al., 2019). In a similar manner, the government banned the importation of second-hand clothing in order to protect local production from global competition (Katende-Magezi, 2017; Achieng, 2012). The ISI strategies were supposed to set the foundation for economic growth and industrial development.

Between 1963 and 1984, the ISI strategies enabled the textile and apparel sector to expand at an expedited pace, with a 44 percent increase in manufacturing value added (MVA); the textile and apparel sector accounted for 12 percent of the total MVA (Swanson, 2007). The annual lint production of cotton increased from 20,000 to 70,000 bales (Ikiara, Ndirangu, 2003, p. 12). The government continued to invest in the textile mills owned by private investors, such as Kisumu Cotton Mills (KICOMI), Mount Kenya Textile (MOUNTEX), and Rift Valley Textiles (RIVATEX), and continued to support small business owners and cotton farmers, such as distributing seeds free-of-charge and providing subsidies to irrigation schemes (Chege et. al., 2014, p. 3; ACTIF, 2013, p. 9). In 1984, the textile and apparel sector was at peak performance with 52 textile mills and 110 apparel manufacturers that employed 500,000 individuals and supported 200,000 small-scale farmers (Omolo, 2006). It was the second largest employer of labor and accounted for 30 percent of employment in the manufacturing sector (ACTIF, 2013, p. 13). However, the success of the textile and apparel sector was not sustainable (Bukachi, 2019, p. 10), especially with the external debt of the government from the state subsidies (WTO, 1993). In addition, the potential of the textile and apparel sector was "severely limited by the size of the domestic market" (Ngui et. al., 2016, p. 73). The ISI strategies laid the foundation for the textile and apparel sector, but was unable to move the sector up the development ladder.
In the 1980s to the early 1990s, the GOK pursued the path of trade liberalization with the expansion of economic activities and removal of restrictions on the exchange of goods between states (Kaldor, 1978). Trade liberalization was supposed to “attract foreign direct investments and boost the performance” of the textile and apparel sector (Bukachi, 2019, p. 10). The move coincided with the external shocks of the first and second oil crises, the erosion of fiscal discipline after the coffee boom, and the collapse of the East African Community (EAC) (Ngui et. al., 2016, p. 73; Chege et. al., 2014, p. 6). As part of the trade liberalization process, the government introduced the structural adjustment programs (SAPs) in order to strengthen the competitiveness of the textile and apparel sector (Ngui et. al., 2016, p. 74). The SAPs were reforms that the government had to implement in order to receive loans, such as the removal of import tariffs and price controls, reduction of state subsidies, and the easement of export restrictions (Chege et. al., 2014, pp. 6-7; ACTIF, 2013, p. xi).

Even though trade liberalization opened the economy up to international investment, the textile and apparel sector continued to be inward-oriented and (increasingly) import dependent (Chege et. al., 2014, p. 7). One explanation is that the government was slow to implement the policies, such as the exchange rate adjustments and high tariff rates (ibid.). This discouraged local manufacturers from expanding their operations to the production of exports. Another explanation is that the sector was capital intensive and required high investment, such as in the form of state subsidies (Kubania, 2018). Without the state subsidies, the annual lint production dropped to the pre-liberalization level of 20,000 bales despite the domestic demand of 120,000 to 140,000 bales per annum, and 52 large-scale textile and apparel manufacturers closed, such as KICOMI and RIVATEX (Kubania, 2018; Ikiara, Ndirangu, 2003, pp. 12-13). At the beginning of the 1990s, the sector employed less than 20,000 individuals – a 96 percent decline (Kubania, 2018). Thus, trade liberalization is attributed to the decline of the textile and apparel sector (Ngui et. al., 2016; Fukunishi, 2012).

To counter that collapse, in the 1990s, the government pivoted from market liberalization to export promotion. The government adopted a series of EOI strategies as “an antithetical” to the ISI strategies (Mangieri, 2007, p. 81). The EOI strategies
“aimed to promote export-oriented manufacturing through a systematic process of tariff reduction and through a variety of market incentives” (Ngui et. al., 2016, p. 74). For example, the government passed the Export Processing Zones Act that introduced Export Processing Zones (EPZs) – industrial areas that offered special incentives to attract foreign investment for export-oriented production. These incentives included a 10-year tax holiday, removal of import tariffs on production inputs, full import duty exemption, freedom to repatriate unlimited amounts of earnings, and unrestricted foreign ownership and employment (Omolo, 2006, p. 148). The purpose of the EPZs was to “promote exports, foreign exchange earnings, transfer of technology and skills, employment creation, and enhancement of industrialization” (ibid.). The Export Processing Zones Authority (EPZA) managed export-oriented investment and trade, and issued licenses for “companies directly involved in export-oriented business activities in manufacturing or processing” (Were, 2016, p. 6). In a similar manner, the government replaced the ISS with the Manufacturing Under Bond (MUB) program that provided a 100 percent tax deduction on equipment, machinery, and materials imported for production. The government designed the program to encourage manufacturing for export (International Trade Administration, 2017). It is important to point out that the program included a condition that everything produced had to be exported. This meant that all of the manufacturers had to pay a value added tax (VAT) to sell in the local market (Imo, Maiyo, 2012).

Even with the emphasis on export promotion, the GOK did not want to abandon the production of textiles and apparel for the local market. The government noted in the Sessional Paper No. 1 of 1999 on the Revitalization of the Cotton Industry that the cotton sub-sector offered the greatest potential to increase employment, initiate rural development, and reduce poverty (Otieno, 2006). In order to protect the textile and apparel sector, the government refused to remove the ban on the importation of second-hand clothes. Instead, the government allowed charitable organizations and churches to bring in second-hand clothes to donate to the refugees from neighboring countries: Rwanda, Somalia, Sudan, and Uganda. This decision led to the trade of second-hand clothes in which the donations entered the market under the name “mitumba” (bundles) and were commercialized with great success (Katende-Magezi,
2017). To further complicate the matter, new clothes were “imported as used clothing to avoid taxes, or disguised as used clothes (from Europe and North America) on market displays, as the latter fetch higher retail prices” (Calabrese et. al., 2017, p. 5). Thus, shortly after, the government had little to no choice but to lift the ban on the importation of second-hand clothes. This was “in a bid to satisfy the call by the population to engage in the trade in second-hand clothes to provide themselves with some way of earning a livelihood” (Achieng, 2012, p. 52).

At the end of the 1990s, the textile and apparel sector started to stagnate due to the combination of the importation of second-hand clothes, increased international competition, and decline of foreign direct investment (FDI). At least 70 percent of the population relied on second-hand clothing (or new clothes masked as used clothes) from Europe and North America (Field, Schmidt, 2007). This put the local manufacturers in a vulnerable position. The local manufacturers failed to optimize their operations to produce high-quality output at a lower total cost, especially with the outdate equipment. For example, RIVATEX had not updated their equipment since 1976 and experienced a production capacity decline from 1.2 million meters per month in 1992 to 900,000 meters per month in 1993 (Wangwe, 2015). The manufacturers were unable to reach capacity utilization above 60 percent.

Thus, the GOK welcomed the enactment of the African Growth and Opportunity Act (AGOA) of 2000 – a USA trade program meant to provide specific African countries with preferential market access. Kenya was the “first AGOA-eligible country to fulfill the additional requirements for the apparel provision” (World Bank Group, 2015, p. 10). Under AGOA, Kenya received duty and quota-free access to the USA market with single transformation rules of origin – a provision that allowed manufacturers to import materials from outside the region. This attracted foreign manufacturers to set up factories in the EPZs (Africa Growth Initiative, 2011). Between 2000 and 2004, the textile and apparel sector experienced an increase in exports to the USA from 45 million USD in 2000 to 277 million USD in 2004 (Omolo, 2006). It is important to note that the GOK reported that the exports increased from 8.5 million USD in 2000 to 332 million USD in 2004 (EPZA, 2005). Thus, the government placed an even greater emphasis on
the economic impact of EOI on economic growth and industrial development. The enactment of AGOA ameliorated the textile and apparel sector for a short period of time (Chege et. al., 2014, p. 4).

Then, in 2005, the Agreement on Textiles and Clothing (ATC) – or the Multi-Fiber Arrangement (MFA) – was terminated and resulted in a free market regime in the global textile and apparel value chain (Fukunishi, 2009). The ATC was a short-term quota system designed to protect the textile and apparel sector of developing countries. The expiration of the ATC exposed developing countries to competition from more established manufacturing economies, such as the Four Asian Tigers (Omolo, 2006). The GOK tried to minimize the impact on the sector prior to the expiration of the ACT, such as removing the taxes on all cotton ginning and textile manufacturing equipment in order to encourage the importation of modern equipment (Mutume, 2006). However, at the end of 2005, 55 out of 110 textile and apparel manufacturers operating in EPZs or under the MUB program relocated, which resulted in the loss of more than 10,000 jobs (Kamau et. al., 2009). This is because about 74 percent of the total EPZ manufacturers were joint ventures made up of investors from China, Germany, India, Italy, South Korea, Taiwan, United Kingdom (UK), and USA (Omolo, 2006). The foreign-owned manufacturers did not have an incentive to continue operations in the EPZs. Thus, after the termination of ATC, the textile and apparel sector experienced slow economic growth and industrial development (Ngui et. al., 2016, pp. 75-76). The government continued to push export promotion, especially under the conducive conditions of AGOA, in order to stimulate economic growth and industrial development.

In 2016, the GOK and other members of the EAC proposed a phase-out of second-hand clothing and footwear imports via a gradual increase in tariffs. The leaders of the EAC stated that the ban was “crucial for employment creation, poverty reduction, and advancement in technological capability” in the region (Calabrese et. al., 2017; BBC, 2016). The aim was to promote the development of the textile and apparel sector. This proposal coincided with the proposal to reduce the importation of used cars. The government supported the ban on the importation of second-hand clothing as a means to increase competitiveness and employment – a critical component of the Big Four
Agenda. The manufacturers in the EPZs also supported the phase-out, recognizing it as an opportunity to sell in the local market (Tyce, 2019a).

The Secondary Materials and Recycled Textiles (SMART) Association and the United States Trade Representative (USTR) responded to the phase-out proposal with a petition to investigate whether or not the ban violated the principles of trade in AGOA. The United States Agency for International Development (USAID) warned that the ban would eliminate 40,000 jobs in the USA, and axe more than 355,000 positions in East African countries. Moreover, USAID stressed that “the EAC has the potential to lose 219,000 full-time jobs derived from the trade preference program, leaving 500,000 people in the region without income” (Kuwonu, 2018, p. 5). The Textile Recycling Association (TRA) of the UK concurred that the ban would lead to an unnecessary increase in unemployment. The TRA added that the ban was based on flawed arguments and misconceptions about the second-hand clothing market. The TRA and the SMART Association issued a joint statement “challenging these assertions and highlighting the really important benefits that our industry brings to the global economy, environment and to social wellbeing” (Latchem, 2016). In conjunction with Bangor University Sustainability Lab and the Bureau of International Recycling (BIR), and supported by the Economic and Social Research Council (ESRC) in the UK, the TRA sent a delegation to meet and persuade the heads of state of the EAC to reverse the ban. The delegation submitted alternative strategies, such as aid to assist local textile and apparel manufacturers (ibid.). The argument was that the phase-out lacked the financial resources and infrastructure to protect the “infant industry from external competition, to give it space to grow and become more productive” (Calabrese et. al., 2017, p. 20).

Due to international pressure, the GOK retreated from the proposal and reversed the tariffs a few months later. The government reasoned that the proposal did not have the capacity to meet the domestic demand for second-hand clothes (Kuwonu, 2018). One possible explanation is that the government was unwilling to jeopardize the short-term employment and revenues via AGOA (Tyce, 2019a). Rwanda, Tanzania, and Uganda, on the other hand, proceeded with the proposal as a form of “smart protectionism”
(ibid.). Over the next three years, the other EAC members raised taxes on second-hand clothing imports and offered incentives to local manufacturers. In 2016, Uganda increased the environment levy on used clothes from 15 percent to 20 percent. In 2018, Rwanda increased taxes on imported used garments from 4 USD per kg to 5 USD per kg. The Finance Minister of Rwanda, Claver Gatete, stated that the “taxes will increase as a way of supporting locally made products and industries, while also minimizing the health risks that come with the used product” (e.g., body lice, scabies, skin candidiasis, and ring worm) (Kuwonu, 2018).

Despite the failure to implement a ban on second-hand clothes, the GOK continued to push for the revitalization of the textile and apparel sector. For example, the government passed the Economic Recovery for Wealth and Employment Creation: 2003-2007, the Investment Program for the Economic Recovery Strategy for Wealth and Employment Creation: 2003-2007, and the Sessional Paper No. 9 of 2012 on the National Industrialization Policy Framework for Kenya: 2012-2030, and established the Kenya Industrial Transformation Program (KITP), the Big Four Agenda, and the Kenyan Vision 2030 (Republic of Kenya, 2012; Omolo, 2006). These policies and programs aimed to create a competitive manufacturing sector “through emphasis on local production, expansion in the regional markets, and identification of Kenya’s niche in global markets” (Chege et. al., 2014, p. 9). It is important to point out that the emphasis remained on the external markets, such as the promotion of industrial parks and special economic zones (ibid.). However, AGOA is scheduled to expire in 2025, which would eliminate the preferential market access and expose the sector to competition from more established manufacturing economies similar to the termination of the ATC in 2005 (World Bank Group, 2015). The textile and apparel sector is in a vulnerable position for the future.

The Present State of the Textile and Apparel Sector

The textile and apparel sector is considered a complete fibre to fashion (F2F) value chain with 8 ginneries, 8 spinning enterprises, 15 weaving and knitting enterprises, 9 accessories enterprises, 75,000 MSMEs, 170 medium- to large-sized enterprises, and 22 EPZ enterprises (KAM, 2020; Manyala, 2016; World Bank Group, 2015). The F2F value chain is “an end-to-end apparel offering, from growing or producing the raw
materials (often cotton) to assembling, finishing, and shipping the garment” (HIVOS, 2016, p. 23).

The textile and apparel sector is sizable in terms of employment with more than 20,000 individuals in the cotton sub-sector, 21,000 in the domestic-oriented sub-sector, and 57,000 in the export-oriented sub-sector (KAM, 2020, p. 11). Employment in the textile and apparel sector "represents about 17.5 percent of formal employment in manufacturing" (USITC, 2009, p. 79). This does not include the 75,000 MSMEs in the informal sector and 760,000 indirect jobs throughout the value chain. The Kenya Association for Manufacturers (KAM) estimates that the textile and apparel sector has the potential to create an additional 800,000 positions of employment (ibid.). This reinforces the expectation that the textile and apparel sector is a catalyst for economic growth and industrial development (Brenton, Hoppe, 2007).

In addition, the textile and apparel sector is substantial in terms of revenue performance, especially from the export-oriented enterprises. As the second-largest manufacturing sector, the textile and apparel sector accounts for 10 percent of the gross domestic product (GDP) (USITC, 2009, p. 79). Kenya is the fourth largest exporter of apparel in Africa, and the second largest exporter of apparel to the USA (Tyce, 2019b; Crowe, 2014). The textile and apparel sector exported an estimate of 41.6 billion Kenyan Shilling (KSH) (circa 365 million USD) to the USA in 2018 – a 25.8 percent increase from 2017 – due to the conducive conditions created in AGOA (AGOA, 2019). This is evidence in support of EOI strategies.

Despite being a part of the entire F2F value chain, integration has not been achieved. The textile manufacturers operate at less than 45 percent of their potential due to the high input costs (e.g., energy, imported materials, labor, and outdated equipment) (World Bank Group, 2015, p. 14). For example, the electrical power required to produce a single bale of cotton is between 35 to 55 kilowatt-hour (kWh). Electricity costs about 0.22/kWh USD, which is the highest in the region and higher than the rates of competitors, such as Ethiopia at 0.02/kWh USD, Tanzania at 0.102/kWh USD, China at 0.09/kWh USD, and USA at 0.06/kWh USD (USITC, 2009, p. 83). In consequence, the
textile manufacturers produce less bales per annum. The Kenyan textile manufacturers produce about 25,000 bales (5,300 tonnes) per annum, whereas the Ethiopian textile manufacturers produce 85,000 bales (18,506 tonnes) and the Tanzanian textile manufacturers produce 310,000 bales (67,495 tonnes) (ibid., p. 81). The Kenyan apparel manufacturers require 174,533 bales (38,000 tonnes) per annum for production. That is almost seven times more than the amount being produced. Likewise, the Kenyan textile manufacturers produce less than 12 million square meters of woven fabric per annum even though the Kenyan apparel manufacturers require 171 million square meters per annum (ACTIF, 2013, p. 32). The rate of local textile production does not meet the needs of the local apparel manufacturers.

Therefore, the local apparel manufacturers source 93 percent of the intermediate materials from abroad – an expensive endeavor (World Bank Group, 2015, p. 23). Under the EAC Common External Tariff (CET), the import tax rate for intermediate materials (e.g., machine-knitted or woven fabrics) is between 20 and 25 percent (KRA, 2021). The import tax rate is higher than the rates of competitors, such as China at between 10 and 13 percent (Chernoff, Zhang, 2021). The cost of imported material contributes to about 64 percent of the manufacturing cost (World Bank Group, 2015, p. 9). This does not include the “long order-to-delivery time…which limits the market segments in which they can compete” (ibid., p. 23).

In addition, the apparel manufacturers have to compete with the importation of second-hand clothes, which is taxed on weight rather than value. Kenya is the number one importer of second-hand clothes in East Africa and fourth largest in the world (OEC, 2019). In 2019, Kenya imported 165 million USD of second-hand clothes, which is equivalent to 8,000 containers (185,000 tonnes), or four percent of the global trade (ibid.).¹ Over 91.5 percent of local households purchase second-hand clothes worth less than 1,000 KSH (circa 9.23 USD) each year and 74.5 percent purchase new clothes for the same amount; whereas 25.5 percent purchase new clothes for more than 1,000

¹The exact scale of the second-hand clothing market is unknown. This is due to the Harmonized Commodity Description and Coding System (HC) that does not differentiate “used commodities,” such as bedding, clothing, and toys (Haggblade, 1990).
KSH (circa 9.23 USD) (Vidija, 2021). The apparel manufacturers cannot sustain an operation cost below 1,000 KSH (circa 9.23 USD) with an import tax rate of 20 to 25 percent. In that sense, the textile and apparel sector is not sustainable.

The Transformation of the Local Market

The local market is a sub-sector of the textile and apparel sector that matured in the midst of the ISI, trade liberalization, and EOI strategies. The local market is composed of entrepreneurs who produce and reproduce merchandise for the local consumer. Examples of these entrepreneurs include tailors, fashion designers, stylists, street vendors, retailers, wholesalers, importers, and exporters. The entrepreneurs work hand-in-hand with the textile and apparel manufacturers, such as KICOMI, MOUNTEX, and RIVATEX. For example, a tailor purchases a yard of kitenge from an enterprise in the local market who sourced that material from RIVATEX. For the most part, the entrepreneurs in the local market are either “Kenyans of African origin” or “Kenyans of Asian origin,” especially from India (Ngui, 2016, p. 84). The Kenyans of African origin own most of the MSMEs; the Kenyans of Asian origin own most of the large enterprises, especially the export-oriented enterprises (Tyce, 2019b, p. 559; Chege, 1998, p. 211). One explanation is “Africa’s limited ability to mobilize financial and human resources” and “extensive flows of information among Kenyan-Asian entrepreneurs” (Ngui, 2016, p. 84). A brief description of each of the entrepreneurs in the local market is provided in the fourth chapter.

Following independence in 1963, the entrepreneurs in the local market welcomed the ISI strategies. This is because the local textile manufacturers started to produce traditional cloth, such as kanga (cotton printed cloth), kitenge (wax print), and kikoy (woven cloth), see Image 1. Prior to independence, Japan produced 85 percent of the available kanga in the local market (Mangieri, 2007, p. 61), and Europe and India produced the rest (Wanduara, 2018, p. 6). From 1963 to 1983, the local textile manufacturers expanded their operations from 6 to 52 textile mills (Wanduara, 2018, p. 6), and enhanced their capacity to produce 115 million square meters of fabric per annum (Omolo, 2016, pp. 151-152). Thus, the entrepreneurs were able to source the
materials from the local textile manufacturers rather than abroad. This allowed the entrepreneurs to reduce their lead time and overall cost.

![Image 1: Kitenge from Nairobi Textiles Center](image)

Entering into the trade liberalization and EOI phases of industrial policies, the entrepreneurs expressed an "anti-exports bias" (Ngui, 2016, p. 74; WTO, 1993). This is because the GOK had "done little to implement effective policies to promote exports," such as an adjustment in the exchange-rate or the removal of restrictive import tariffs (Githaiga, 2021, p. 110). Thus, the entrepreneurs continued with an inward-oriented approach, producing collections with the traditional cloth for the local consumer. That said, the entrepreneurs participated in liberalization and EOI programs, such as the Kenya/World Bank Voucher Scheme of the 1990s. The scheme targeted tailors in the
informal sector. The aim was to “upgrade existing technical skills and acquire new ones” (Apunda, 2017, p. 346). While the technical skills of the tailors improved over a short duration of time, the scheme was expensive and was not renewed.

Unlike the textile and apparel manufacturers, the entrepreneurs in the local market were not as concerned with the importation of second-hand clothes (Imo, Maiyo, 2012). The entrepreneurs did not see the second-hand clothing market as immediate competition (King, 1996, p. 115). This is because the entrepreneurs, especially the tailors, fashion designers, and stylists, “labored over sewing machines to make made-to-order ensembles” with an emphasis on traditional cloth rather than cotton or synthetic materials (Fretwell, 2021, p. 155). The entrepreneurs produced clothes that were made-to-measure rather than mass-produced (Tabishat, 2019, p. 20). Every piece was tailored to the customer. In addition, the entrepreneurs were able to continue to source the traditional cloth from the local textile manufacturers, such as RIVATEX. For example, in 1990, RIVATEX was producing more than 480,000 meters of kanga per month – 50 percent of total production (Ikiara, 1995).

In the late 1990s, the local market became overwhelmed with second-hand clothes to the point that the local textile and apparel manufacturers had to “either close down or become redundant,” such as Allied Industries Limited, Heritage Woolen Mills, KICOMI, and RIVATEX (Imo, Maiyo, 2012, p. 32). In addition to the mass dumping of second-hand clothes, new products entered the local market as used commodities in order to avoid taxes (Calabrese et. al., 2017, p. 5). Imported used clothes accounted for 16.4 percent of the local market, imported new clothes accounted for 20.8 percent, and imported new fabric accounted for 17.5 percent (Omolo, 2016, p. 158). In particular, the Chinese counterfeit or imitation wax cloth posed “competition threats to local manufacturers” (Githaiga, 2021, p. 111; Mastamet-Mason, Ogembo-Kachienga, 2012, p. 339). This is because the imitation wax cloth was about 10 percent cheaper than local cloth (Githaiga, 2021, p. 111). The textile manufacturers were unable to compete with the cheaper products. For example, from 1992 to 1993, RIVATEX decreased their production 25 percent (Ikiara, 1995). The local entrepreneurs, on the other hand, were able to compete. While the imported cloth was considered “sub-standard” to the local
cloth, the entrepreneurs were able to use it to produce made-to-measure merchandise for the local consumer (Mugambi, 2008).

In the early 2000s, however, the average annual rate of inflation increased from two percent in 2002 to 11.6 percent in 2004 (Omolo, 2016, p. 147). This created an erosion in purchasing power and reduced the standard of living (Tabishat, 2019, p. 24; Omolo, 2016, p. 147). The local consumer was more likely to purchase a second-hand piece for 100 KSH (circa 0.88 USD) than to order a custom piece for 5,000 KSH (circa 43.86 USD). While the entrepreneurs continued to receive orders in the high season, such as at Christmas-time, there was a drastic decline in demand (Tabishat, 2019, pp. 37, 40). The entrepreneurs could not compete with the low prices in the second-hand clothing market. In addition, the second-hand clothing market was an attractive employment option. The average retailer in the second-hand clothing market earned 2.5 times more than the casual laborer and 10 to 15 percent more than the standard tailor (Imo, Maiyo, 2012, p. 33). Thus, the second-hand clothing market drained the labor pool from the local market.

In the last decade, the entrepreneurs pivoted their operations. For the made-to-measure services, the entrepreneurs “used less expensive fabrics and produced simple finished goods” (Buckley, 1997, p. 430). These entrepreneurs established acquisition agreements with textile mills in Tanzania – one of the largest producers of kanga – rather than with the local textile mills (Wanduara, 2018, p. 6). In addition, the entrepreneurs “undertook a larger volume of alterations and repair work” (ibid.). The entrepreneurs became more versatile in order to target the customers “who place orders: made-to-measure garments, micro-production of garments for wholesale, for retail and all sorts of repairs” (Apunda, 2017, p. 352). The entrepreneurs casted a wide net to lure in any customers.

As a result, the local market is not excessively segmented (Mastamet-Mason, Ogembo-Kachienga, 2012). The local market is an alternative to the second-hand clothing market in which the entrepreneurs provide more custom-made collections rather than mass-produced commodities. The entrepreneurs target as many consumers as possible
without much consideration to the characteristics of the type of consumers, such as socio-economic status. There is limited “targeted marketing” (Mastamet-Mason, Ogembo-Kachienga, 2012, p. 348). That is not to claim that there is no segmentation in the local market. Some entrepreneurs enter niche markets, such as the production of school uniforms or sports apparel (Data Bridge Market Research, 2022; USAID, 2017, p. 6; Mastamet-Mason, Ogembo-Kachienga, 2012, p. 342). However, for the most part, the local market is fairly well integrated. For the purpose of the thesis, the local market is talked about as a single entity.

The research project puts the local market and the entrepreneurs in the local market at the center of the analysis. I look at the entrepreneurs who created a sub-sector of manufacturing that complements and competes with the global textile and apparel value chain, especially the second-hand clothing market. In particular, I pay special attention to the “mundane activities in the foundational economy,” such as apparel production or food retail (Bowman, 2017, p. 20). The foundational economy is an economic zone that “delivers everyday goods and services” (ibid., p. 20). These goods and services are “necessary to everyday life,” “consumed by all citizens regardless of income,” and “distributed according to population through branches and networks” (ibid., p. 119). The aim of the research project is to explore the ways in which the entrepreneurs navigate and negotiate the processes and structures of the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The pattern of navigation and negotiation reveals how the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process.

**Structure of the Thesis**

In the thesis, I examine the extent to which the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I argue that the entrepreneurs continue the production process of the global textile and apparel value chain into the local market. Their goal is to enhance their performance. By
participating in each stage of the production system (e.g., research and development, product design, materials production, product development, logistics and sourcing, distribution, and retail sales), the entrepreneurs accumulate a higher level of technological capabilities. Technological capabilities is a concept that refers to the experience, knowledge, and skills that an individual or an organization accumulates over a period of time. The level of technological capabilities in turn shapes the production process. The ways in which the entrepreneurs navigate and negotiate the processes and structures of the global textile and apparel value chain in order to accumulate technological capabilities is able to explain the construction of knowledge in the local market.

The research project is based on qualitative research methods, with an emphasis on semi-structured interviews. I adopt the technological capability (TC) approach in combination with the global production network (GPN) approach, and draw on scholarship in African studies, global value chains, international development, technological capabilities, and textile and apparel production. The TC approach captures all of the activities that the entrepreneurs assume in order to accumulate technological capabilities, while the GPN approach encompasses all of the participants in the local market, especially those considered outside of the value chain. In doing so, I answer the research question:

1. How do the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market?

And the sub-research questions:

1. In what ways do the entrepreneurs impact the local market through their engagement with the global textile and apparel value chain?
2. To what extent do the entrepreneurs navigate and negotiate the resources available, including the resources from the global textile and apparel value chain, in order to enter and be competitive in the local market?
3. What activities do the entrepreneurs undertake in order to enter and be competitive in the local market?
4. To what extent does location impact the level of technological capabilities of the entrepreneurs? How do the entrepreneurs position and reposition themselves in the local market in order to encounter opportunities to accumulate technological capabilities?

To provide a more nuanced assessment, I connect the scholarship on the global textile and apparel value chain and technological capabilities, draw on the data from 130 in-depth interviews, and put the local market at the center of the analysis. I consider all of the entrepreneurs in the local market as “agents of change” who act as catalysts for economic growth and industrial development (Trulsson, 1997, p. 3). This is a significant contribution to the literature that gives a greater prominence to those who produce for the global market. The local market is composed of entrepreneurs – tailors, fashion designers, and stylists – that produce and reproduce clothes for the local consumer. The entrepreneurs participate in activities that extend from the global production system in order to expand their skill set and enhance their knowledge in the local market. For example, a fashion designer participates in an in-house training program at an EPZ, which is the part of the global textile and apparel value chain that produces the final product. By participating in the in-house training program, the fashion designer is able to acquire skills in production, such as pattern drafting and garment construction. The EPZ serves as a source of skills. In a similar fashion, a tailor purchases a t-shirt from the second-hand clothing market, which is the part of the global textile and apparel value chain that resells the final product. By shopping at the second-hand clothing market, the tailor is able to acquire skills in investment, such as project preparation and sourcing time. The second-hand clothing market serves as a source of inputs. I explain the ways in which the entrepreneurs navigate and negotiate the processes and structures of the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. My exploration of this pattern of navigation and negotiation reveals how the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process. In doing so, the research makes a significant contribution to the literature that currently diminishes the role of the construction of knowledge in the local market.
The thesis is divided into eight chapters. The introduction provides a rundown of the themes and questions in the research project. I describe the development of the textile and apparel sector in Kenya, with an explanation of the adoption of EOI strategies and the removal of import regulations. This gives a sense of how the small-scale analysis of the local market is embedded in the broader discourse of the global textile and apparel value chain. Thus, I put the local market at the heart of the research project with the question: how do the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market? The chapter sets the stage for the rest of the thesis.

In the second chapter, I review a selection of the relevant literature on the local market. I point out that the literature on the local market is often looked at in relation to the global textile and apparel value chain (Baden, Barber, 2019; Balchin, Calabrese, 2019; Rani, Kumar, 2018; Tyce, 2018; Calabrese et. al., 2017; Whitfield, Staritz, 2017a; Whitfield, Staritz, 2017b; Brooks, 2013; Frazer, 2008; Brenton, Hoppe, 2007). The perception is that participation in the global textile and apparel value chain (e.g., production of exports) is essential to economic growth and industrial development (Allaro, 2012; Ahmed et. al., 2011; Mangieri, 2006). This is because participation in the global textile and apparel value chain provides the entrepreneurs with opportunities to accumulate an advanced level of technological capabilities. On the other side of the coin, the literature on the local market is concerned that the importation of second-hand clothes is potentially harmful to the industrialization process (Calabrese et. al., 2017; Baden, Barber, 2015; Brooks, Simon, 2012; Ahmed et. al., 2011; Frazer, 2008; Mangieri, 2006). This is because the second-hand clothing market presents the entrepreneurs with problems rather than opportunities, such as a decline in demand for domestic production (Frederick, 2018; Frazer, 2008). Since the emphasis is on the technological capabilities of the global market, I contend that the literature is unable to adequately characterize the construction of knowledge in the local market. The entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market rather than the global market.
In addition, I evaluate three approaches that the literature on the local market adopts to assess participation in the global textile and apparel value chain: the global commodity chain (GCC), global value chain (GVC), and global production network (GPN). The GCC approach is equipped to explain all of the stages of the production system, whereas the GVC approach is all about the process of value creation at each stage of the production system. It is important to note that although the approaches do not concentrate on the same aspects of the production system (process of production versus produces of value creation), the criticism is one and the same: the approaches do not consider components outside of the production system. The GPN approach, on the other hand, is attentive to all of the relevant sets of relationships within and outside the production system. The approach is a valuable tool to conceptualize the interconnections between chain and non-chain actors in the global textile and apparel value chain. That said, the GPN approach is similar to the GCC and GVC approaches in that the concept of learning is not the center of attention. The approach is unable to understand the process of accumulation of technological capabilities.

To address that concern, I adopt the TC approach in combination with the GPN approach. The TC approach is able to capture all of the activities that entrepreneurs in the local market undertake in order to enhance and expand their technological capabilities. Unlike the GPN approach, the TC approach is rooted in the concept of continuous learning. The GPN approach is a complementary tool to use in conjunction with the TC approach. This is because the GPN approach encompasses all the entrepreneurs, and the TC approach consists of all of the activities in the process of accumulation of technological capabilities.

The third chapter is divided into two main sections: the analytical framework and the methodologies. In the first section, I discuss the application of the TC approach in relation to the research. The TC approach is concerned with the process of accumulation of technological capabilities at the microeconomic level. I design a two-dimensional technological capability matrix of functions and levels that adheres to the standards of the local market rather than the global textile and apparel value chain. I use the matrix for the rest of the thesis to assess all of the activities that the
entrepreneurs in the local market undertake in order to acquire knowledge over time, and then absorb and adapt that knowledge to the local conditions.

In the second section, I outline the methodological approach applied to answer the main research question and sub-research questions. I tease out the merits of qualitative research methods via interviews and surveys, and recognize that the analysis relies more on the data driven from the interviews than the surveys in order to tackle the phenomenon. This is due to the comprehensive dissemination of information on the learning activities in the local market. I reflect on the methodological considerations and choices that I made throughout the research process.

In the fourth chapter, I explain the application of the GPN and TC approach in relation to the research. I adopt the GPN approach to encompass all of the chain and non-chain actors who contribute to the construction of knowledge in the local market, especially the entrepreneurs (e.g., tailors, fashion designers, and stylists). This is critical as non-chain actors “have considerable prominence” in shaping the process of accumulation of technological capabilities, such as Association of Kenyan Tailors (AKT) and the Kenya Fashion Council (KFCO) (Horner, Nadvi, 2018, p. 209). Then, I apply the TC approach to assess all of the activities that the entrepreneurs in the local market assume in order to accumulate technological capabilities. The combination of approaches allows me to characterize the entrepreneurs based on their functions rather than their common classifications, such as a fashion designer is a person who designs clothes. I draw attention to the activities in order to depict an accurate description of the entrepreneurs. The chapter is a reference point for the rest of the thesis.

In the fifth chapter, I make use of the two-dimensional technological capability matrix to describe the technological capabilities of the entrepreneurs in the local market. I start with an evaluation of each of the entrepreneurs to determine the width of functions performed in the local market (investment, production, innovation, logistics operations, and linkages) and the level of capabilities accumulated with each function (basic, intermediate, and advanced). For example, I look at the ability of a machine operator to work with equipment and machinery in order to achieve an output. From there, I am able to determine his or her level of technological capabilities in equipment.
management. I create a matrix for each of the entrepreneurs in the local market. Then, I classify each of the entrepreneurs into one of three categories: tailors (machine operators, fundis, custom tailors, and ready-to-wear tailors), fashion designers (custom fashion designers, ready-to-wear fashion designers, and haute couture fashion designers), and stylists. I compile the individual matrices and calculate the mean rank for each of the categories in order to paint a picture of the construction of knowledge in the local market.

The technological capability matrix is a practical tool to examine the extent to which the entrepreneurs take advantage of the opportunities in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. For instance, I reveal the ways in which the entrepreneurs reorientate the resources available to produce and reproduce merchandise that meets the local consumer demand, such as a custom tailor who removes the sleeves of a second-hand t-shirt and replaces those sleeves with the local print: *kitenge*. This shows the extent to which the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process.

In the sixth chapter, I am interested in all of the avenues that the entrepreneurs in the local market undertake in order to accumulate technological capabilities. These avenues include formal and informal learning activities. In the matrix, I show that all of the entrepreneurs seek out opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market. The tailors tend to participate in informal learning activities to accumulate technological capabilities in production, and the fashion designers tend to participate in formal learning activities to accumulate technological capabilities in investment and innovation. The tailors want to accumulate practical skills; the fashion designers want to accumulate theoretical knowledge. Then, I explain the extent to which the entrepreneurs enhance and expand their technological capabilities, such as pursuing a combination of formal and informal learning activities. This is because the level of technological capabilities achieved to enter the local market...
is not sufficient to be competitive over a period of time. Continuous learning is imperative for the entrepreneurs to be competitive in the local market.

The matrix is a valuable mechanism to assess all of the activities that the entrepreneurs undertake as a means to operate in the versatile and uncertain landscape. I am able to use the matrix to illustrate that the informal learning activities allow the entrepreneurs to accumulate the technological capabilities needed to enter the local market; whereas the formal learning activities do not allow the entrepreneurs to accumulate the technological capabilities needed to enter the local market – at least most of the time. This is because the formal learning activities adhere to the standards of the global market rather than the local market. The formal learning activities provide the entrepreneurs with the theoretical knowledge, such as technological capabilities in branding and marketing. This is not sufficient to enter the local market. Thus, in the local market, formal learning is a supplement rather than a substitute to informal learning.

In the seventh chapter, I look at the impact of location on the process of accumulation of technological capabilities of the entrepreneurs in the local market. I turn to the technological capability matrix to characterize 11 of the most common locations in the local market: home, street, marketplace, stall, shop, store, office, workshop, warehouse, other enterprises, and online. I show the extent to which the locations provide opportunities for the entrepreneurs to accumulate the technological capabilities needed to enter and be competitive in the local market. For instance, a fundi works on the side of the street – a location that attracts a consistent stream of consumers looking for alterations or repairs. Therefore, the entrepreneur is able to achieve an intermediate level of technological capabilities in production in pieces. I contend that all of the locations present opportunities for the entrepreneurs to achieve a higher level of technological capabilities. The importance of location cannot be understated.

That said, I acknowledge that not all of the entrepreneurs are able to access all of the locations in the local market. This is important as not all of the locations present the same opportunities to accumulate technological capabilities. Therefore, I make use of the matrix to understand the extent to which the entrepreneurs make the most of their location in order to accumulate technological capabilities. For example, a fashion
designer works in a combination of locations: one area for the production operations and another area for the retail operations. These locations provide the space needed to mass-produce and build a client base. Thus, the fashion designer is able to achieve at least an intermediate level of technological capabilities in more than one function. While not all of the entrepreneurs start off at the same point, the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.

In the conclusion to the thesis, I reiterate the significance of the phenomenon at hand: the entrepreneurs participate in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I tease out the contributions of the thesis to the existing literature on the local market (Whitfield et. al., 2020; Yuri, Mai, 2019; Calabrese et. al., 2017; Whitfield, Staritz, 2017a; Staritz et. al., 2016; Baden, Barber, 2015; Brooks, 2015; Brooks, Simon, 2012; Fernandez-Stark et. al., 2012; Ahmed et. al., 2011; Frazer, 2008; Morrison et. al., 2008; Brenton, Hoppe, 2007; Mangieri, 2006), with an emphasis on the construction of knowledge in the local market. In addition, I explain the potential implications of the COVID-19 pandemic on the local market. The pandemic provides an avenue for the local entrepreneurs to tap into the global textile and apparel value chain, such as reproducing the production lines to manufacture medical equipment. I suggest avenues for future research, such as the mid-term impact of the COVID-19 pandemic, and invite future scholars to further consider the construction of knowledge in the local market. I conclude with a policy recommendation to advance the process of accumulation of technological capabilities in the local market.
Chapter 2: Critical Engagement with the Literature and the Problematic

Introduction

The purpose of the chapter is to review a selection of the relevant literature on the local market, in particular that of which concerns the construction of knowledge. The literature on the local market is often considered in relation to the global textile and apparel value chain, such as the “capabilities required to participate and upgrade in global value chains” (Borges, Vieira, 2016, p. 1171). The argument of academics, such as Ritu Rani and Naresh Kumar (2018), Lindsay Whitfield and Cornelia Staritz (2017), and Paul Brenton and Mombert Hoppe (2007), is that participation in the global textile and apparel value chain is essential for economic growth and industrial development. This is because “the exposure to learning processes among partners in the global value chains generates knowledge spillovers and stimulates human and technological capital upgrading” (OECD, 2008, p. 10). Participation in the global textile and apparel value chain provides opportunities for the entrepreneurs in the local market to enhance their learning (Morrison et. al., 2008). The achievement of an advanced level of technological capabilities “is a must for achieving (sustainable) economic development and improving living conditions” (Fagerberg, Srholec, 2017, p. 905). Thus, export-oriented industrialization is presented as an accelerated avenue to economic growth and industrial development (Allaro, 2012; Ahmed et. al., 2011; Mangieri, 2006).

Due to the emergent role of the textile and apparel sector in economic growth and industrial development, academics such as Katherine Frederick (2018) and Garth Frazer (2008) have expressed concern that the importation of second-hand clothes is potentially harmful to the industrialization process. This is because the second-hand clothing market presents “alternative employment opportunities” that draw the entrepreneurs away from the local market (Frederick, 2018, p. 23). The increased competition from imported products eliminates the incentive for the entrepreneurs to accumulate the technological capabilities in areas, such as production (Rani, Kumar, 2018; Frazer, 2008).

To assess participation in the global textile and apparel value chain, the literature considers one or a combination of three approaches: the global commodity chain
(GCC), global value chain (GVC), and global production network (GPN). This is especially the case for the scholarship of economic geography and international development (Coe, Yeung, 2019; Jones et. al., 2019; Gereffi, 2013; Coe et. al., 2008). I introduce each of the approaches, and explain their applications. All of the approaches serve as a comprehensive tool to describe each stage in the production of a product. I continue that the GPN approach is an appropriate tool to comment on all of the entrepreneurs in the global textile and apparel value chain; however, the approach is unable to understand the process of accumulation of technological capabilities.

I situate the research project in relation to the existing literature and the three approaches in order to discuss in more detail the problems and themes. The research question touches on a number of scholarships: African studies, global value chains, international development, technological capabilities, and textile and apparel production. While there is much research to draw upon, especially about the global textile and apparel value chain (Rani, Kumar, 2018; Whitfield, Staritz, 2017a; Whitfield, Staritz, 2017b; Brenton, Hoppe, 2007), there is little that is specific to the technological capabilities needed to enter and be competitive in the local market. Instead, the emphasis is on the technological capabilities needed to participate in the global market. I contend that the conversation on the local market in relation to the global value chain is unable to adequately characterize the construction of knowledge in the local market. The entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market rather than the global one.

To address that concern, I turn to the TC approach to put the local market at the center of the analysis. I introduce the TC approach in terms of the big picture, without becoming immersed in the separate literatures. The TC approach is able to understand all of the activities that entrepreneurs in the local market undertake in order to enhance and expand their technological capabilities. I conclude that the GPN approach is a complementary tool to use with the TC approach. This is because the GPN approach is able to conceptualize all of the entrepreneurs in the global textile and apparel value
chain, and the TC approach is able to characterize all of the activities in the process of accumulation of technological capabilities.

**Critical Engagement with the Literature on the Local Market**

The literature on the local market is extensive, with a particular emphasis on the extent to which participation in the global textile and apparel value chain contributes to economic growth and industrial development (Balchin, Calabrese, 2019; Rani, Kumar, 2018; Calabrese et. al., 2017; Whitfield, Staritz, 2017a; Whitfield, Staritz, 2017b; Frazer, 2008; Brenton, Hoppe, 2007). A value chain “is the set of value-adding activities through which a product passes from the design to the consumption stages. The worth of the product increases at each point of the process, hence the term value chain” (McCormick, Schmitz, 2001, p. 155). The global textile and apparel value chain involves the coordination of primary activities (inbound logistics, operations, outbound logistics, marketing and sales, and post-sale services) and secondary activities (product development, procurement, and technology research) (Jones et. al., 2019). These activities add value towards the end product.

Situated in the scholarship of economic geography and international development, the literature on the local market is in consensus that participation in the global textile and apparel value chain, such as the production of exports, contributes to economic growth and industrial development (Rani, Jumar, 2018; Whitfield, Staritz, 2017a; Whitfield, Staritz, 2017b; Borges, Vieira, 2016; Brenton, Hoppe, 2007). This is because participation in the global textile and apparel value chain presents opportunities for the entrepreneurs to expand their technological capabilities, especially value-adding capabilities (e.g., research and development (R&D), design, and branding and marketing) (Balchin, Calabrese, 2019; Brenton, Hoppe, 2007). In contrast, there is ambivalence about the impact of the importation of second-hand clothes on the local market. On one hand, the importation of second-hand clothes cuts down on the opportunities for the entrepreneurs in the local market to accumulate technological capabilities, including necessary non-value-adding capabilities (e.g., inspection of the end product) (Rani, Kumar, 2018; Frazer, 2008). On the other hand, it is difficult to draw a conclusion on the direct correlation between imports and the level of technological
capabilities accumulated in the local market due to other contributing factors, such as a high cost of inputs or a low level of managerial capabilities (Brooks, Simon, 2012). I review the recent contributions to the literature on the local market in order to confirm that the center of attention is on participation in the global textile and apparel value chain rather than participation in the local market. Relative to the extensive literature, the level of technological capabilities called for to enter and be competitive in the local market is uncharted. This is one of the contributions of the thesis.

A significant proportion of the literature on the local market is enthusiastic about the extent to which participation in the global textile and apparel value chain contributes to economic growth and industrial development. For example, Gereffi et. al., explain that participation in the global textile and apparel value chain is a “path for development” (Gereffi et. al., 2013, p. ii). This is because the global textile and apparel value chain provides opportunities for economic and social-upgrading. Economic upgrading is explained as “a move to higher value activities in production” (Gereffi, Lee, 2016, p. 29). Social upgrading is defined as “the process of improvement in the rights and entitlements of workers as social entrepreneurs and the enhancement of the quality of their employment” (ibid., p. 26).

Paul Brenton and Mombert Hoppe concur that the textile and apparel sector in African countries is a driver of development that “provides an opportunity for export diversification and the first steps to greater manufactured exports…the first steps away from sole reliance on agricultural products towards high-valued added activities” (Brenton, Hoppe, 2007, p. 2). The scholars share that the textile and apparel sector is important to economic growth and industrial development for three reasons: (i) the sector absorbs a large number of unskilled labor, (ii) the expansion of the sector provides a base to “build capital for more technologically demanding activities in other sector,” and (iii) the growth of the sector allows for “imports of more advanced technologies to be financed through exports” (ibid., pp. 3-4). However, Brenton and Hoppe caution that the “barriers to entry to firms seeking to become exporters on the global market may be higher than in the past” (ibid., p. 17). This is because the buyers require the suppliers “to take responsibility for fabric and input sourcing, design
services, supplier-managed inventory, production flexibility, regular visits to retailer, product development and to provide invoicing on a 90-day basis” (ibid.). Thus, the scholars encourage investment in export capabilities in terms of “logistics and supply base management” to ensure that the textile and apparel sector remains a driver of development (ibid., p. 18).

In a similar manner, Sumit Manchanda et. al., claim that the textile and apparel sector is “a critical creator of formalized jobs, a well-known path to industrialization, and an enabler of value chain relationships that modernize economies and make them more complex” (Manchanda, 2020, p. 1). The academics maintain that it is not possible to look at the local market without reference to the global market. This is because the textile and apparel sector is “more interconnected” than other sectors (ibid., p. 8). Therefore, in order to achieve greater economic diversification on a global scale, the academics remark that local manufacturers need to possess “recognizable global brands, a capacity for strong research and development, advanced design and innovation capabilities, client-oriented quality controls, and a flexible network of outsourcing partners” (ibid., p. 3). It is critical for local manufacturers to continue to “add capabilities to [their] capabilities” (ibid., p. 2).

Lindsay Whitfield and Cornelia Staritz provide an in-depth examination of the emergence and evolution of the textile and apparel sector in Ethiopia. The authors contend that the production of textiles and apparel for export is an important driver of “economic transformation and industrialization” (Whitfield, Staritz, 2017a, p. 8). However, the Ethiopian-owned firms encounter challenges to enter and be competitive in the global textile and apparel value chain (ibid., p. 2). This is because the “existing textile mills in Ethiopia do not produce the kinds of fabric or the level of quality required for knit or woven apparel demanded by buyers” and “labor productivity is still low by international standards, making labor in Ethiopia relatively expensive in terms of productivity even though labor costs are very low” (ibid., pp. 11-13). Thus, the firms use “production for the domestic market as a strategy to ensure some stability and profits, while trying to learn and become efficient in production for export markets” (ibid., p. 2). Whitfield and Staritz conclude that almost all of the firms aim to “enter the export market
as a means to increase their capabilities,” such as to learn new production techniques (ibid., p. 30). The “firms see the value of exporting in terms of learning, but learning is a costly process and the prices set by buyers do not allow for a margin of error; therefore, firms use the domestic market as a means to subsidize the cost of learning to compete” (ibid.). In sum, the Ethiopian-owned firms perceive the domestic market as a source of capital to overcome the challenges of entering and becoming competitive in the global textile and apparel value chain.

Likewise, Cornelia Staritz et. al., evaluate the characteristics of export-oriented textile and apparel firms in five African countries: Kenya, Lesotho, Madagascar, Mauritius, and Swaziland. The scholars assert that “export diversification into higher-value-added products and away from primary commodities” is an essential step for economic growth and industrial development (Staritz et. al., 2016, p. 5). In order to compete at the global level, the firms “have to focus on improving competitiveness and initiating upgrading” (ibid., p. 20). This entails:

- Fulfilling high performance requirements with regard to quality, lead times and flexibility, complexity of products and different types of product, adherence to social and environmental standards, and broader non-manufacturing functions, such as input sourcing on suppliers’ own account, understanding product development and design, inventory management and logistics (ibid., p. 21).

The firms need to develop “full-package capabilities” in order to transition from Cut, Make, and Trim (CMT) to Full Production Package (FPP) (ibid.). Thus, Staritz et. al., recommend that the African governments invest in developing value-addition capabilities and establishing linkages to the local and regional economies, such as the adoption of regional integration arrangements with the aim to “reduce lead times and costs, capture more value added and linkages in the region, and diversify end markets” (ibid., p. 22). This is necessary in order to “capture the gains” of the global textile and apparel value chain (ibid., p. 20).

Karina Fernandez-Stark et. al., contend that participation in the global textile and apparel value chain provides “opportunities for developing countries to drive economic
growth and add value to their industries; however, countries must align their skills development to meet international labor demand to sustain and upgrade their positions within GVCs” (Fernandez-Stark et. al., 2012, p. 4). The academics explain that the “traditional workforce development systems often do not provide the skills required by global industries, and thus greater coherence is required between the skills imparted by education and training and the capabilities required by the private sector” (ibid.). The local firms seek “alternatives to overcome the shortcomings of the education system,” such as complex arrangements or interventions with stakeholders (ibid.). These arrangements or interventions “will support GVC upgrading, creating competitive industries with flexible workers able to adapt to international trends” (ibid., p. 24).

Ritu Rani and Naresh Kuma adopt an alternative approach. The authors review the relationship between export, import, and economic growth in Brazil, Russia, India, China, and South Africa (BRICS). Based on data from 1967 to 2014, the authors adopt the Pedroni’s panel cointegration test. The results show that a “1 percent increase in export will lead to a .44 percent increase in GDP per capital” in the long term (Rani, Kumar, 2018, p. 13). Thus, the production of exports is “positively associated with economic growth” (ibid., p. 18). The authors assert that “export is necessary for gross capital formation and import expansion” (ibid., p. 21). Meanwhile, the relationship between imports and economic growth “is found negative and significant” (ibid., p. 21).

Intergovernmental organizations (IGOs) and non-government organizations (NGOs) report on the contributions of participation in the global textile and apparel value chain too. While the aim of the reports is to provide policy recommendations, rather than contribute to academia and advance the conversation, the data collected and conclusions drawn are similar in that of the academics above: participation in the global textile and apparel value chain contributes to economic growth and industrial development in the local market. For instance, USAID perceives the development of the textile and apparel sector as “a key entry point to industrialization” for African countries (USAID, 2014, p. 9). The agency points out that prior to the preferential trade agreements (e.g., AGOA and MFA) the textile and apparel sector in “Africa was largely underdevelopment” and could not compete “against fierce international competition”
This is because the sector had “weak market linkages and information, inadequate trade logistics, and insufficient capital” (ibid.). The preferential agreements provide the sector with “unprecedented market access” to stimulate economic growth and industrial development (ibid.). That said, USAID recommends that African firms “need to achieve significant additional improvements to competitiveness at every stage of the supply chain” in order to “realize the potential for effectively integrating into global production networks” (ibid., p. 10). For the small firms with niche products, the agency notes that “the best option may be to refine branding capabilities to secure greater rents (e.g., high-quality suits in Mauritius)…or to enter a product niche (e.g., work-wear in Zambia) where demand does not vary significantly throughout the year and in which there are fewer competitors” (ibid.). For the large firms with standardized products, the agency encourages local or regional vertical integration in order to reduce costs and control risks (ibid.). USAID stresses that these recommendations require “significant investment…to develop production capacity and improve quality” (ibid.).

The OECD looks at the extent to which participation in the global textile and apparel value chain benefits SMEs. The OECD reports that participation in the global textile and apparel value chain provides more “stability” in the volume of production (OECD, 2008, pp. 3, 24, 73). In addition, participation is accompanied with “the upgrading of technological and human capital, as a result of the greater exposure and facilitated access to information, business practices and technologies” (ibid., p. 73). However, the SMEs struggle to enter the global textile and apparel value chain due to “the inadequate availability of managerial and financial resources, and the inability to upgrade, protect in-house technology, and to innovate” (ibid., p 10). In particular, the SMEs cannot “finance their production cycle, since after goods are delivered most buyers demand 30 to 90 days for payment” (ibid., p. 31). To overcome these obstacles, the OECD recommends that the SMEs coordinate “with upstream and downstream partners” in order to “leverage on access to an extended network of partners and to superior technology and staff skills” (ibid., p. 73). The OECD concludes it is crucial to support capability buildings for SMEs via “skills development” and “promote partnerships between SMEs and organizations overseas that can develop or transfer technology, products, processes or management practices” (ibid., p. 74).
The problem with the existing literature on the local market is that it is written from the vantage point of the global market in order to look at the extent to which participation in the global textile and apparel value chain contributes to economic growth and industrial development. The emphasis is placed on the technological capabilities needed to enter and be competitive in the global textile and apparel value chain. That is not to say that the literature fails to take into account the contributions of the entrepreneurs who produce for the local market, such as the creation of employment opportunities (KAM, 2020), but rather that greater prominence is given to the entrepreneurs who produce for the global market. This is because the local market is considered too small to generate sufficient demand to drive economic growth and industrial development (Fernandez-Stark et. al., 2012). Thus, the conversation on the local market in connection to the global textile and apparel value chain is unable to adequately characterize the construction of knowledge in the local market. The research question of the thesis aims to explain the extent to which the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market rather than the global one.

Even the literature that looks at the extent to which participation in the local value chain contributes to economic growth and industrial development does so in reference to the standards of the global textile and apparel value chain. For instance, HIVOS is interested in how to create an inclusive and sustainable F2F value chain in Kenya, “in which local fashion designers and small tailors can play a meaningful role on the domestic and global manufacturing and retail scene” (HIVOS, 2016, p. 4). In order to strengthen the national F2F value chain, HIVOS recommends “better designs, innovation, and presence on the domestic retail font” (ibid., p. 6). At the moment, the national F2F value chain is fragmented “with few linkages between the different segments of the industry, and between companies operating in the Export Process Zones (EPZs) and those catering for the domestic markets” (ibid., p. 28). The “local design capabilities are not being exploited either by the companies operating in the EPZs or by the medium and large firms servicing the domestic market. In this value-chain, local designers and small tailors are non-existent” (ibid.). Instead, the local
designers and small tailors have “created a self-employment space for themselves” on a “made to measure” basis for the local consumer (ibid.).

In order to tap into the global textile and apparel value chain, HIVOS recommends that the fashion designers and small tailors transition low-value addition to high-value addition activities, from CMT to FPP and ODM [Original Design Manufacturing] (ibid., p. 4). The fashion designers should “move out of the ‘made to measure’ to ‘ready to wear’ segment…and join the mainstream industrial manufacturing to add value to Kenya exports” (ibid., p. 5). This would mean that the fashion designers are “responsible for the entire supply chain: design, manufacturing, quality control, logistics, and distribution” (ibid., p. 22). Meanwhile, the small tailors should “develop their own networking cluster to avoid competing at the low-end of the market” (ibid., p. 5). HIVOS calls for the creation of a professional skills training program that provides basic business training, such as on “industry standards, introductory bookkeeping, [and] customer responsiveness expectations,” and develops operational capabilities, such as “logistics, providing training and support on how to handle shipping, [and] import and export documentation” (ibid., p. 57).

In a similar manner, the World Bank Group sees the textile and apparel sector in Kenya “as a source of gainful employment” (World Bank Group, 2015, p. ii). The organization observes that the sector “offers opportunities for increased value capture…and for the building of skills and experience from the factory floor to management level,” and thus is able “to capture an increasing share of global trade and to advance economic diversification” (ibid.). The World Bank Group encourages the government to increase access to the local and the global markets. In order to increase access to the local market, the government needs to “cater to the green and small batch markets,” such as the non-EPZ enterprises that produce uniforms for public service agencies (ibid., p. 32). The organization supports initiatives, such as the Buy Kenya, Build Kenya initiative, “to ensure public service uniforms are purchased from local manufacturers” (ibid.). In order to increase access to the global market, the government needs to sponsor “trade shows and tours for Kenyan firms to see buyers and producers will enable firms to generate much needed B2B connections” (ibid.). This is significant with the expiration of AGOA in
The World Bank Group concludes that the government needs to prioritize “building skills to address productivity issues at the managerial, technical, and factory floor level” (ibid., p. 28). This is because the “ability to manage human resources, and update and upgrade the skill base of the labor force has become a defining feature of successful and competitive textile and apparel sectors” (ibid., p. 29).

Likewise, Neil Balchin and Linda Calabrese recognize the local market in Tanzania as a route to economic development. The authors draw on the experience of six countries – Bangladesh, Cambodia, Ethiopia, India, Lesotho, and Madagascar – to “pinpoint what is required to establish an integrated value chain, from cotton to clothing, and raise local ownership of textile and garment manufacturing” (Balchin, Calabrese, 2019, p. 7). From the case studies, the authors contend that “openness (both to trade and foreign investment) and export orientation are important drivers of growth along the cotton-to-clothing value chain” (ibid.). This is because the local market can “capitalize on the benefits of preferential access for exports to key markets,” such as the development of domestic production capabilities (ibid., pp. 7-8). For example, FDI “is pivotal to kickstarting the process, as it brings knowledge of the sector, as well as networks of suppliers and customers” (ibid., p. 49). The scholars recommend that Tanzania “promote an export-oriented textile and garment production model, focusing on high value markets” in order to “build local capabilities and develop backward linkages” (ibid., p. 52).

England et. al., on the other hand, tackle the topic from a more holistic perspective. The authors review the existing literature on African fashion and economic development to “rethink the interconnection between creative producers and global production and trade networks in relation to sustainable local development” (England et. al., 2021, p. 1). The authors perceive African fashion designers as creative entrepreneurs and cultural agents with the potential to drive economic development. That said, the fashion designers confront numerous challenges, such as restricted access to training and resources, policies that target basic skills development in EPZs rather than in the local market, and volatile shifts in the global economy (ibid., p. 3). These challenges impact capability building and scaling up production. To counter these challenges, the authors
share that the fashion designers seek out opportunities to “connect across multiple levels of the value chain…rather than being limited to the ‘design’ segment of the fashion value chain” (ibid., p. 6). Thus, even though the authors speak on the local market in reference to the standards of the global textile and apparel value chain, the emphasis is on the extent to which the fashion designers connect with the global market in order to be “dominant players” in the local market (ibid.).

Furthermore, England et. al., “call for further interdisciplinary research on fashion designers not just in terms of garment production, but as creatives, cultural producers, and centers for value creation” (ibid., p. 2). In doing so, the authors seek to spark “critical engagement with GVCs that extends the discussion beyond prioritizing the lead firm and end markets in the Global North to activities between Southern continents” (ibid., p. 8). In the thesis, I accept that challenge and take their critical engagement with the literature on the global textile and apparel value chain a step further. I am interested in the extent to which all of the entrepreneurs connect with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I concentrate on the construction of knowledge in the local market that drives value creation.

The second strand of the literature is interested in the impact of the importation of second-hand clothes on the local market, such as on the accumulation of technological capabilities (Frederick, 2018; Baden, Barber, 2015; Achieng, 2012; Brooks, Simon, 2012; Frazer, 2008). For instance, Garth Frazer considers the correlation between apparel production and second-hand imports in African countries. Based on statistics from 1981 to 2000, he shares that the imports above the 0.1 kg per capita threshold “have a negative impact on apparel production in Africa, explaining roughly 40% of the decline in production and 50% of the decline in employment” (Frazer, 2008, p. 1764). A standard t-shirt weighs about 0.1 kg, whereas a pair of jeans weighs close to 1 kg. Thus, import levels above “1 light T-shirt per person in terms of weight” impact apparel production (ibid., p. 1778). He believes that this is “one possible explanation for the failure of African countries to step onto the bottom rung of the manufacturing sophistication ladder, that is to produce apparel” (ibid., p. 1764). The importation of
second-hand clothes is a barrier to growth for African countries because there is “weak demand in the sector” to produce (ibid., p. 1757). There is no incentive to accumulate the skills in production. Frazer concludes that the impact of the second-hand clothing imports is “substantial and significant” in the decline of apparel production and subsequent employment compared to other factors that hamper apparel production (ibid., p. 1781).

Katherine Frederick looks at the development of the local market in East Africa. She explains that “it was not direct competition from imports that stymied cloth production in parts of Africa; rather, ‘alternative employment opportunities’ often drew the local labor force away from industry” (Frederick, 2018, p. 21). She continues that “African producers chose to allocate their labor where the most profit could be accrued – based on local conditions and global trading opportunities” (ibid., p. 27). For instance, the areas with more constricted labor sources “were more inclined to abandon cloth production in favor of less labor-intensive alternative production opportunities” (ibid., p. 37). Thus, it is important to assess the “local conditions” which interacted with and mediated external forces – to understand the array of factors that swayed local labor allocation decisions” (ibid., p. 23). Frederick concludes that the argument that the importation of second-hand clothes undermines the production of local cloth in East Africa is a “simplistic assumption” that overlooks other factors that influence economic growth and industrial development (ibid., pp. 17-18, 23). It is more than the “capacity of imported cloth to displace domestic textiles” (ibid., p. 17).

Andrew Brooks and David Simon believe that it is difficult to draw a direct correlation between the decline of the textile and apparel sector in African states and the influx of second-hand clothing imports. This is because of the other contributing factors to the decline in African clothing manufacturing. For example, the privatization of textile firms “was catastrophic as new owners lacked capital, management capacity, and competence” (Brooks, Simon, 2012, p. 1277). Another important contributing factor was the “increased competition from imported Asian clothing producers, which have greater labor productivity and lower production costs” (ibid., p. 1284). The authors continue that preferential trade agreements, such as AGOA, have “benefited some larger African
clothing manufacturers...[and] could enable African clothing producers to take advantage of improved terms of trade" (ibid., p. 1285). This is “a further complicating factor in unravelling the relationship between used-clothing imports and industrial decline is, therefore, that decreases in production for national consumption may be masked by increases in production for export markets” (ibid., p. 1280).

Likewise, Sally Baden and Catherine Barber consider the impact of the importation of second-hand clothes in African countries, such as Senegal. The scholars share that the second-hand clothing market has “played a role in undermining industrial textile/clothing production” (Baden, Barber, 2015, p. 2). The local textile mills are “unable to compete” with the low-cost goods (ibid., p. 14). That said, the scholars assert that “such imports have not been the only cause” for the closure of textile mills (ibid., p. 2). Other constraints include “unreliable and expensive infrastructure; the cost and availability of materials; outdated capital stock and lack of access to credit; and inadequate training and management skills” (ibid.). In addition, the scholars reveal that in some circumstances the second-hand clothing imports “complement rather than replace domestic production” (ibid., p. 12). In the case of Senegal, the importation of second-hand clothes has “limited or neutral” impact on tailors (ibid., p. 27). In order to advance the textile and apparel sector, the scholars advocate for more support for the local entrepreneurs “to improve their competitiveness in domestic and export markets,” such as management skills (ibid., p. 3).

Linda Calabrese et. al., look at the potential short- and long-term impacts of the EAC phasing out imports of second-hand clothing, such as in Tanzania. The fundamental idea of the phase-out is “based on the assumption that domestically produced clothing competes directly with used clothing, and that the imports of used goods have contributed to the decline of the domestic garment industry” (Calabrese et. al., 2017, p. 20). This is because the “availability of low-cost used garments depresses demand for clothes produced domestically” (ibid., p. 4). The authors caution that the short-term impact of the phase-out could be “employment losses” (ibid., p. 1). This is because the phase-out could prompt an influx of new clothing imports to meet the local consumer demand. The long-term impact of the phase-out, on the other hand, could be that the
textile and apparel sector is “a stepping-stone for countries to develop capabilities to move into higher-value added manufacturing activities” (ibid., p. 2). The sector could “create opportunities for value addition and possibilities to upgrade…and if geared towards exports it could be a source of foreign exchange” (ibid.). The authors conclude that the long-term impact “will depend on whether it [the phase-out] prompts new investment…to replace the imports of new and used clothes” (ibid., p. 2).

The literature on the impact of the importation of second-hand clothes is open to debate. This is because it is difficult to draw a direct correlation between the imports and the level of technological capabilities accumulated in the local market. That said, it is important to note that the literature looks at the importation of second-hand clothes from the perspective of the global textile and apparel value chain. The literature, such as the investigation of Calabrese et al., (2017), is interested in the extent to which the importation of second-hand clothes impacts the “possibilities to upgrade” in the global textile and apparel value chain (ibid., p. 2). I contribute to the literature by putting the local market at the center of the analysis. I am interested in the technological capabilities needed to enter and be competitive in the local market. Thus, despite the common perception that the importation of second-hand clothes is at least one of the causes to the industrial decline of the local market (Frazer, 2008), I assert that the imports create alternative avenues for the entrepreneurs to accumulate technological capabilities. The second-hand clothing market is more than a “complement” to the local market (Baden, Barber, 2015, p. 12), it is a crucial component to the construction of knowledge. The literature is unable to capture the alternative avenues of accumulation because the local market is assessed from the position of the global textile and apparel value chain.

While the merit of participation in the global textile and apparel value chain is well-documented, especially the economic contributions of the production of exports, there is little research on the merit of participation in the local market. Participation in the local market is almost a moot point without reference to participation in the global market. The emphasis is on the technological capabilities required to transition from CMT to FPP. This is a crucial gap in the literature as the technological capabilities required in
the local market do not always mirror the technological capabilities required for the global market.

It is important to point out that the literature on the informal economy, such as Kate Meagher (2016), does place more attention on the entrepreneurs who produce for the local market. Meagher carries out extensive empirical and theoretical research on the informal labor market in Africa. She contends that the informal labor market is “full of dynamic potential,” but cautions that vulnerable realities reside beneath that potential, such as a demographic transition or a lack of basic social protection (ibid., pp. 483, 488, 491). She continues that “simply linking these vulnerable informal labor markets into GVCs…do[es] little to carry out the kind of economic change necessary to expand access to decent livelihoods for Africa’s burgeoning labor force” (ibid., p. 494). This is because such linkages “tend to expand rather than reduce levels of informality…and exacerbate poverty and vulnerability at the bottom of the chain, owing to competitive pressures to shift risks and costs down the chain” (ibid., p. 490). Meagher warns that GVCs tend to create “poverty nodes” via low-paid and unprotected forms of employment at the bottom of the chain (ibid., 491). However, even the literature on the informal economy that aims to capture the economic interests of the informal labor market is written in connection to participation in the global value chain. Thus, the dynamics of the entrepreneurs in the local market is underplayed.

The aim of the research project is to address that gap in the literature, putting the local market at the center of the analysis. I speak on ways in which the entrepreneurs steer the means of production in the global textile and apparel value chain into the local market in order to meet the local consumer demand. In doing so, I am able to better represent the construction of knowledge in the local market.

Global Value Chain Analysis: Approaches

The global value chain is a concept that categories “the full range of activities that firms, and workers perform to bring a product from its conception to end use and beyond” (Gereffi, Fernandez-Stark, 2011, p. 4). The emphasis is on “the value addition” at each stage in the production system: pre-production (R&D and product design), production (materials production and product development), and post-production (logistics and
sourcing, distribution, and retail sales) (University of Cambridge, 2020, p. 4; Keane, 2014, p. 2; Gereffi, 2013).

To assess participation in the global textile and apparel value chain, the literature situated in the scholarship of economic geography and international development considers one or a combination of the three approaches: GCC, GVC, and GPN. The aim of all three of the approaches is to delineate the process through which goods and services are designed, produced, and introduced to the market (Bair, 2009). The approaches run parallel to each other with a common comprehension on (i) how the value chain is organized, (ii) the transition from low to high value-added activities, and (iii) the power dynamics of contemporary globalization (Horner, Nadvi, 2018; Lee, 2010; Bair, 2009). Despite the comparable characteristics, each of these approaches have distinctions in terms of disciplinary roots, empirical concerns, and substantive emphasis.

The GCC approach traces the “network of labor and production processes whose end result is a finished commodity” (Duke University Global Value Chain Center, 2017; Hopkins, Wallerstein, 1986, p. 159). The approach looks at each step in the production system, from the extraction of the raw materials to the consumption of the end product. That said, the GCC approach is often criticized as an over-simplification of the production system. Due to the “exclusive focus on internal conditions and organizational linkages,” the approach neglects more complex structures operating outside the production system, such as culture, geography, and governance structures (Lee, 2010, p. 1).

Similar to the GCC approach, the GVC approach describes the different stages of the production system, but pays special attention to “the process of value creation” or “the process of upgrading” in which value is added to a good or service at each step in the production system (e.g., market research, product development, and branding and marketing) (Duke University Global Value Chain Center, 2017; Gereffi, Memedovic, 2003). The approach looks at “the sequences of tangible and intangible value-adding activities,” from conceptualization to commercialization (Gereffi, Fernandez, 2011, p. 4). This provides a more nuanced understanding of the power relations between the actors (Alam, Natsuda, 2016; Humphrey, Schmitz, 2000). However, the GVC approach is
criticized for not recognizing the role of non-chain actors, such as the state, NGOs, and global institutions (Horner, Nadvi, 2018).

The GPN approach is similar to the GCC and GVC approaches. The approach considers the “[creation of] value through the transformation of material and non-material inputs into demanded goods and services” (Coe et. al., 2008, p. 274). The distinction is that the GPN approach is conscious of all of the horizontal and vertical arrangements between chain and non-chain actors in the production system (ibid.). The horizontal linkages refer to the inter-firm relationships on the same level of the production system and the vertical linkages relate to the intra-firm relationships at separate levels of the production system (Kano et. al., 2020, p. 581). The approach accepts that all of the actors in the production system are embedded in broader structures and institutions of the global economy (Gibbon, Ponte, 2005). This is important as all of the actors “engage and shape the geographies of political, cultural, and social conditions as well as the transformation processes of production and also consumption activities” (Muthu, Gardetti, 2020, p. 145). For example, a non-chain actor (e.g., the state and public institutions) has the capabilities to add value to a good or service via assisting local producers, improving the production process, and providing financial or technological support (Kaplinsky, Morris, 2001). However, one of the main criticisms of the GPN approach is the incorporation of all of the actors, such as the practical steps to assess both chain and non-chain actors (Horner, Nadvi, 2018).

Out of the three approaches, the GPN approach is the best avenue to explore the extent to which the entrepreneurs in the local market engage with the global textile and apparel value chain. The approach is more than “the mere production and commercial transactions” (Muthu, Gardetti, 2020, pp. 144-145). The approach is a relational one that considers the complex relations between chain and non-chain actors, or the “different modes (e.g., indigenous, functional and structural coupling) and types (e.g., innovation hubs, logistics hubs, assembly platforms, etc.) of strategic coupling” (Coe, Yeung, 2019, p. 780). The approach “initiates a more dynamic approach to theorizing global production networks as a dominant organizational platform through which actors in different regional and national economies compete and cooperate for a greater share
of value capture in global production” (Coe, Yeung, 2015, p. 29). Therefore, I adopt the GPN approach in order to conceptualize the interconnections between chain and non-chain actors, and the ways in which the entrepreneurs in the local market compete and cooperate to create and capture value in the global textile and apparel value chain. I describe the application of the approach in the fourth chapter.

Despite the value contributions, the GPN approach is not without constraints. For the purpose of the research project, the approach is relatively weak in terms of recognizing all of the learning avenues that the entrepreneurs assume in order to accumulate technological capabilities. The approach perceives learning as participation in the global production network, such as “knowledge spillovers and technological learning” (Yeung, 2021, p. 1003). This is because the emphasis is on the “networking nature of the global economy as a tangled web of production circuits and networks of interconnected economic processes that are grounded and embedded in specific locations” (Yeung, 2016, p. 266). The emphasis is not on the construction of knowledge in the local market. While there is no doubt that learning at the microeconomic level is influential in innovative activities and upgrading capabilities, and that the global textile and apparel value chain “provides access to accelerated learning” (Taglioni, Winkler, 2016, p. 2), the approach is unable to understand the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market (Morrison et. al., 2007; Asheim, Coenen, 2006). To address that constraint, I adopted the TC approach to tackle the problematic.

**The Technological Capability Approach**

In the 1980s, the TC approach emerged in response to the extensive literature on the importance of technological change for economic growth and industrial development (Kim, 1997a, 1997b; Lall, 1987). The purpose of the approach is to assess the process of accumulation of technological capabilities at the microeconomic level, in particular, that of an individual and an organization (Morrison et. al., 2007, p. 6). Technological capabilities are the resources needed for technological change, such as experience, knowledge, and skills (administrative, managerial, and technical), as well as institutional...
linkages and structures (Morrison et. al., 2007, p. 6; Bell, Pavitt, 1993, p. 163). Technological capabilities are accumulated over a period of time via “technological efforts,” such as a purchase agreement for information or an in-house training program (Gonsen, 1998, p. 7; Biggs et. al., 1995, p. 18). Therefore, the process of accumulation of technological capabilities is characterized as “the construction of knowledge” (Isik, 2018, p. 705).

Building on that definition, technological capability is “the learning undergone by individuals in the course of working in the enterprise and the way in which the firm combines and motivates individuals to function as an organization” (Biggs et. al., 1995, p. 17). The individual is in possession of the experience and skills that contribute to knowledge creation, and the organization is the custodian and manager of knowledge, adjusting the learning process, building a catalogue of achievements, and creating the institutional linkages (Gonsen, 1998, p. 7). As a result, the technological capability of the organization is not the “simple sum of individual learnings,” but rather the conversion of individual learning into organizational learning (Yoon, et. al., 2009, p. 54).

In the TC approach, capability is considered “a fairly large-scale unit of analysis, one that has a recognizable purpose expressed in terms of the significant outcomes it is supposed to enable, and that is significantly shaped by conscious decision both in its development and deployment” (Dosi et. al., 2001, p. 4). That characterization of capability puts a strong emphasis on the ability of an individual or an organization to enable technological change with conscious purpose. The TC approach acknowledges that the individual or the organization is able to achieve technological change with subconscious purpose, such as in the form of “automatic and habitual activities” (Dosi et. al., 2003, p. 6). In general, however, the approach contends that capability involves a “presumption regarding evident purpose” or “presumption of deliberation” (ibid.).

It is important to note that an individual or an organization needs to make “continuous efforts” in order to accumulate technological capabilities (Figueiredo, 2003a, p. 638). While a “basic core of functions” (Lall, 1992, p. 168), or a “static level of competence” (Biggs et. al., 1995, p. 17), is necessary to ensure success, it is insufficient to be competitive. In that sense, “passive learning is inadequate” (Biggs et. al., 1995, p. 17).
The individual or the organization needs to build that “basic core of functions” or become obsolete (Lall, 1992, p. 168).

Thus, the TC is a useful tool to understand the process of learning at the microeconomic level because it is able to capture all of the activities that an individual or an organization assumes in order to accumulate technological capabilities (Cimoli, 2000, p. 5). For instance, an individual is able to develop basic skills in production quality control through “units or ‘chunks’ of organized activity with a repetitive character” (Dosi et. al., 2001, p. 4). Or an organization is able to build advanced skills in equipment management through an in-house training program (Figueiredo, 2003b). Furthermore, the TC approach is able to recognize the external variables that influence the process of accumulation of technological capabilities, such as macroeconomic conditions, political constraints, and social relations (Figueiredo, 2003a; Cimoli, 2000, p. 9).

In order to assess the process of accumulation of technological capabilities at the microeconomic level, Sanjaya Lall introduces a basic technological capability matrix based on two principles: the functions performed and the degrees of complexity. Table 1 is an example of his matrix (Lall, 1992, p. 167).

<table>
<thead>
<tr>
<th>DEGREE OF COMPLEXITY</th>
<th>BASIC</th>
<th>ADVANCED</th>
<th>INTERMEDIATE</th>
<th>INVESTMENT</th>
<th>FUNCTIONAL</th>
<th>PRODUCTION</th>
<th>LINKAGES WITHIN ECONOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SIMPLE, ROUTINE (Experience based)</td>
<td>ADAPTIVE, DIPLOMATIC</td>
<td>INNOVATIVE, RISKY (Research based)</td>
<td>PRE-INVESTMENT</td>
<td>PROJECT EXECUTION</td>
<td>PROCESS ENGINEERING</td>
<td>PRODUCT ENGINEERING</td>
</tr>
<tr>
<td></td>
<td>Prefeasibility and feasibility studies, Site selection, scheduling of investment</td>
<td>Search for technology source, Negotiation of contracts, Negotiating suitable terms, Info systems</td>
<td>Basic process design, Equipment design and supply</td>
<td>Feasibility and feasibility studies, Site selection, scheduling of investment</td>
<td>Civil construction, ancillary services, equipment erection commissioning</td>
<td>Debugging, balancing quality control preventive maintenance, assimilation of process technology</td>
<td>Assimilation of product design, machine adaptation to market needs</td>
</tr>
<tr>
<td></td>
<td>Equipment procurement, detailed engineering, training and recruitment of skilled personnel</td>
<td>In-house process innovation, basic research</td>
<td>Turnkey capability, cooperative R&amp;D, licensing own Technology to others</td>
<td>Equipment procurement, detailed engineering, training and recruitment of skilled personnel</td>
<td>Equipment stretching, process adaptation and cost saving, learning new technology</td>
<td>Equipment stretching, process adaptation and cost saving, learning new technology</td>
<td>Product quality improvement, licensing and licensing new imported product technology</td>
</tr>
</tbody>
</table>

In Table 1, the columns represent the three distinct, but interrelated, functions: production, investment, and innovation (Westphal et. al., 1985). Production capability is
the ability to operate a production process; investment capability is the ability to “expand and establish” a new production process; and innovation capability is the ability to create and implement changes in a production process (Malerba, Mani, 2009, p. 162). The rows constitute three levels of complexity: basic, intermediate, and advanced (Lall, 1992, pp. 166-168; Bell, Pavitt, 1993). The basic level is routine, such as operating a machine; the intermediate level is adaptive, such as improving an existing process; and the advanced level is innovative, such as developing a new technology (Zawislak et. al., 2014; Kumar et. al., 1999, p. 84; Lall, 1992).

The functions set out in Table 1 is not an exhaustive list, but rather an example. An individual or an organization does not have to perform all of the functions to be operational. For example, an organization can hire a contractor or consultant to undertake the product engineering (Lall, 1992, p. 168). In a similar manner, the categorization of complexities is indicative since it is difficult to infer whether or not a function is simple or complex. The categorization does not suggest that all individuals accumulate technological capabilities in a linear progression, or that all organizations start and end at the same stages (Figueiredo, 2006; Lall, 1992). Instead, the categorization is convenient to describe the diverse levels of performance.

The TC approach is not without constraints or criticism. For example, Marco Haenssgen and Proochista Ariana express confusion on the application of the TC approach in comparison to the application of the capability approach (Haenssgen, Ariana, 2018). The authors assert the TC approach is redundant because technology is “a special kind of capability input” that can be integrated into the capability approach (ibid., p. 98). It is important to note that the TC approach is similar to the capability approach in that “capabilities are the basis for the achievement of functionings” (ibid., p. 100). That said, the capability approach is concerned with what an individual is able to do and to be, from engaging in economic transactions to being well-nourished. Capability in that sense is the “alternative combination of functionings the person can achieve, from which he or she can choose one collection” (Nussbaum, Sen, 1993, p. 31). The capability approach is a normative approach to human welfare that seeks to measure “the quality of life” (ibid., p. 30). The ultimate aim is to assess the well-being of an individual, such
as happiness and preference-satisfaction. Meanwhile, the TC approach is less concerned with the well-being of an individual or an organization, and more concerned with the learning process that allows the individual or the organization to accumulate technological capabilities over time. The approach is about the construction of knowledge (Lall, 1987). Haenssgen and Proochista do not conceptualize the TC approach as more than “the categories of technical objects and technological conversion factors” (Haenssgen, Ariana, 2018, p. 108).

In a similar manner, the concept of “technological capability” is sometimes used as a synonym for “production capacity.” Aderemi et. al., share that this is because “both are regarded as stocks of resources” (Aderemi et. al., 2009, p. 3). However, production capacity is the ability to produce a specific quality and quantity of goods or services with the resources available (e.g., equipment, labor skills, and raw materials) (Cimoli, 2000, p. 3). Production capacity is dependent on “the set of knowledge and skills to use the [existing] technology” (Zawislak et. al., 2014, p. 134). Technological capability is the ability to acquire and apply resources to the production system over a period of time (Bell, Pavitt, 1993). Technological capability is dependent on the “ability to learn and adapt to change,” such as improving the existing technology or inventing new technology (Kraemer-Mbula, Wamae, 2010, p. 52). While production capacity has a role in the construction of knowledge, technological capability is a process of learning at the microeconomic level.

Last but not least, the scholarship on textile and apparel production tends to call attention to the technical dimension of technological capabilities rather than the administrative or the managerial dimensions (Hoque et. al., 2021; Naing, Fei, 2015). For instance, Tin Htoo Naing and Yap Su Fei define technological capability as “a process of accumulating technical knowledge or a process of organizational learning” (Naing, Fei, 2015, p. 7). Under that definition, the scholars review the relationship between technological capabilities, labor productivity, and export intensity in the textile and apparel sector in Myanmar. The scholars contend that the local enterprises lack the technological capabilities to compete with the global enterprises. Likewise, Md Aynul Hoque et. al., characterize technological capabilities in terms of technology adoption.
The authors assert that technology adoption is a “prominent feature” in the global textile and apparel value chain, especially the fashion supply chain. Technology adoption in the fashion supply chain pertains to computer-aided design, radiofrequency identification, and virtual-try-on technology for e-commerce (Hoque et al., 2021).

The attention on the technical dimension poses a serious problem as the TC approach is presumed to provide a more comprehensive account of the construction of knowledge. The approach is supposed to transcend the hardware (equipment) and software (information) side to capture “the endogenous process of technological capability development” (Morrison et al., 2007, p. 6). This is because all activities (administrative, managerial, and technical) advance the process of learning (Morrison et al., 2007). In fact, the administrative and managerial aspects more often than not determine “the ability of firms to integrate knowledge in different technical domains or over time” (Tsekouras, 2006, p. 144).

To ensure that the research project avoids that potential pitfall, I make use of scholarship on emerging markets and technological learning, innovation, and development. For example, Michael Hansen, Esther Ishengoma, and Radha Upadhyaya review the performance of 210 SMEs in Kenya, Tanzania, and Zambia (Hansen et al., 2018). The authors explain that the performance of an enterprise is associated with three elements: business environment (institutions, infrastructure, and intermediaries and linkages), capability (technical and financial, human resource, and managerial), and strategy (competitive, internalization, and political and network). In particular, the managerial capability is “strongly associated with variance in performance” (ibid., p. 21). This is because an enterprise with a high level of managerial capabilities is able to “navigate the rapidly changing and constantly challenging African business environments” (ibid.). The enterprise is able to adopt niche strategies or establish international relationships. Based on their analysis, the authors assert that industrial policies need to assist SMEs in the development of managerial skills rather than financial or technical ones via “fostering an entrepreneurial culture, intensifying on-the-job training of managers, and strengthening management training and education” (ibid.).
Likewise, Radha Upadhyaya and Dorothy McCormick concentrate on the technological capabilities that enable entrepreneurs to overcome the challenges of their environment. Based on 19 case studies in Nairobi, the scholars share that the success of an enterprise, regardless of size, is attributed to “the vision and leadership of the entrepreneur” (Upadhyaya, McCormick, 2020, p. 169). This allows an enterprise to “guide others to work towards a particular goal,” “hire and retain skilled workers,” “interact constructively with customers,” and “solve complex problems” (ibid, pp. 169, 173). The scholars emphasize the softer technological capabilities over the harder technological capabilities. Upadhyaya and McCormick request that more research be pursued on the extent to which the entrepreneurs develop the softer technological capabilities (Upadhyaya, McCormick, p. 185).

I undertake that request, and tease out the ways in which the entrepreneurs accumulate the technological capabilities needed to enter and be competitive in the local market. I agree that administrative and managerial capabilities matter as much as technical capabilities, especially for MSMEs. This is because most of the MSMEs depend on the soft capabilities of the entrepreneur, such as “ability to hire and retain skilled [and specialized] workers” or the ability “to bounce back from uncertain times” (e.g., resilience) (Upadhyaya, McCormick, 2020, pp. 173-174). Therefore, I assess all of the avenues that contribute to the construction of knowledge: administrative, managerial, and technical. I understand that the technical dimension is but one aspect of the learning process, and recognize that the administrative and managerial aspects of the learning process “should be addressed explicitly and become an integral part of the analysis” (ibid.).

While the TC approach is open to criticism, the fundamental aim is clear: conceptualize the construction of knowledge. The TC approach is used to assess all of the activities that the entrepreneurs assume in order “to acquire the domain of new technologies, to adapt them, and to improve them” over a period of time (Lall, 1987). Thus, I adopt the TC approach in order to understand ways in which the entrepreneurs accumulate the technological capabilities (administrative, managerial, and technical) needed to enter
and be competitive in the local market. I describe the application of the approach in the third and fourth chapters.

The Combination of the Global Production Network Approach and the Technological Capabilities Approach

The combination of the GPN approach and the TC approach is not new. Since the GPN approach encompasses all of the entrepreneurs, and the TC approach assesses all of the activities to accumulate technological capabilities, the approaches complement each other. For instance, Sato Yuri and Fujita Mai integrate the essential elements of the GPN and TC approaches to evaluate the extent to which firms in developing countries accumulate technological capabilities in order to participate in the global value chain. The scholars create a matrix in which the GPN approach is represented in the columns and the TC approach in the rows. The functions of a firm align with the sequential order of the global value chain (pre-production → production → post-production) in order to determine “the depth of capabilities” (Yuri, Mai, 2009, p. 12). The scholars note that the chain of functions provides “useful insights into the changing patterns in which international production and trade are organized and coordinated” (ibid., p. 4). This linear sequence of activities “reflects global industrial constellations where lead firms determine the functional width in which local firms operate” (ibid., p. 13). Yuri and Mai conclude that the combination of approaches captures “the role of global and local industrial constellations in shaping the process of local firm capability formation” and the “achievement of learning that extends across the whole range of activities” (ibid., p. 24).

Lindsay Whitfield et. al., assess the firm-level processes of building technological capabilities in developing countries. The scholars share that the GVC/GPN approaches misconstrue the challenges that the local firms in developing countries confront in order to enter and be competitive in global value chains. This is because the approaches “downplay the importance of local firms learning and building capabilities through participating in GVCs and the (though limited) room for maneuver to capture value, even in the context of asymmetric power relations and constrained agency” (Whitfield et. al., 2020, p. 214). To address that concern, the scholars combine the conceptual and methodological aspects of the GVC/GPN approach with the TC approach in order to
focus on the firm-level processes of building technological capabilities. In doing so, the authors reveal “the role of firm-level resources and related decisions on export strategies and capability-building in the context of specific national, regional, and global structures” (ibid., pp. 197, 214). Drawing on the GVC/GPN approaches with the TC approach presents “a reconceptualization of how local supplier firms build technological capabilities in the context of GVCs” (ibid., p. 214). In addition, the combination of approaches is able to explain the challenges that the local firms in developing countries confront in entering, upgrading, and capturing value in global value chains.

In a similar manner, Zhenming Sun and Guanghu Zhang introduce the literature on technological capabilities to the literature on global value chains in order to understand the “levels of upgrading activities” (Sun, Zhang, 2009, p. 32). The authors comment that in the context of global value chains “technological capability refers to the capacity of local suppliers with the support of global buyers to generate and manage technological change” (ibid., p. 34). Technological change is a cumulative process that is prompted via routine production and critical revision (ibid.). It is the “knowledge and experience that is probably significantly distinguishing from what is needed to run existing systems” (ibid.). The authors assert that the literature on technological capabilities is able to explain “how global chains foster upgrading activities in low-income economies at a firm-level focus” (ibid., p. 35). Looking at the literature on global value chains from the perspective of the literature on technological capabilities shows how “some firms can upgrade into global value chains” and “some are not able to do that” (ibid.).

Kashika Arora and Areej Aftab Siddiqui conduct a comparative performance assessment of the electronic and hardware sector (high-tech) and the textile and apparel sector (low-tech) in order to reveal the relationship between the accumulation of technological capabilities and participation in global value chains, such as the production of exports. The scholars show that “emerging economies, such as Brazil, India, and China, have climbed up the value chain by building production capabilities” via “learning by exporting” (Arora, Siddiqui, 2020, pp. 13-16). This is because “the import of sophisticated goods (whether capital or other intermediate products) and inward FDI flows leading to technological spillovers/dissemination have benefited
The scholars contend that investment in R&D capabilities is essential in order to enter and be competitive in global value chains.

Andrea Morrison et al., on the other hand, review the literature on the global value chain in connection to the TC approach. The authors assert that the “firm-level analyses of the learning and innovation processes in local small and medium sized enterprises (SMEs), and their technological capabilities, although often cited as important, do not constitute a core issue in the GVC studies reviewed” (Morrison et al., 2008, p. 47). While the literature on the global value chain explains the extent to which the interactions between global buyers and local producers enhance learning via access to technological knowledge and expansion of innovation activities, the central focus is not “on the endogenous process of technological capability development, on the specific firm-level efforts, and on the contextual factors enhancing and/or hindering the process” (ibid., p. 40). Thus, the literature on the global value chain cannot describe economic growth and industrial development in developing countries. The TC approach is a potential solution. The authors explain that the TC approach provides “a solid theoretical background for integration of the GVC literature and for building a theoretical framework to explain industrial development in developing countries” (ibid., p. 40). This is because the approach allows for a firm-level analysis of learning and innovation processes that lead to the creation of technological capabilities. The approach “encompass[es] the analysis of in-house activities, and integrate the process of transfer and acquisition of technologies with the in-house efforts of local producers” (ibid., p. 51). Morrison et al., call for the combination of the GVC literature and the TC approach in order to understand the relationship between upgrading strategies and technological capabilities in a detailed focus at the firm-level.

I contend that the combination of the TC approach and the GPN approach is able to explain the extent to which the entrepreneurs in the local market accumulate technological capabilities. However, unlike the existing literature that looks at the “accumulation of technological capabilities of local producers with the assistance of global buyers” (Sun, Zhang, p. 32), or the role of the global value chain “in shaping the
process of local firm capability formation” (Yuri, Mai, 2009, p. 25), or the “processes of building capabilities…required for entering and upgrading in GVCs” (Whitfield et. al., 2020, pp. 197-198), I adopt a bottom-up assessment with the TC and GPN approaches. I am interested in how those at the back-end of the global textile and apparel value chain engage with those in the front-end in order to accumulate the technological capabilities needed to enter and be competitive in the local market. In doing so, I contribute to the literature on technological capabilities and global production networks.

**Conclusion**

The purpose of the chapter was to review a selection of the relevant literature on the local market. Situated in the scholarship of economic geography and international development, the literature on the local market is in consensus that participation in the global textile and apparel value chain contributes to economic growth and industrial development. This is because participation in the global textile and apparel value chain provides a means to accelerate the accumulation of technological capabilities. To assess participation in the global value chain, the literature turns to one or a combination of three approaches: GCC, GVC, and GPN. While all of the approaches set out the stages in the production system, the GPN approach is the most appropriate tool to capture the complex relations between chain and non-chain actors.

Even so, the GPN approach is limited in understanding of all of the learning avenues that the actors undertake in order to accumulate technological capabilities. This is because the emphasis is on “the ‘strategic coupling’ of the global production networks of firms and regional economies” (Coe et. al., 2004, p. 468), rather than the process of acquiring technological capabilities. Thus, another approach is required to assess all of the avenues of learning in the local market: the TC approach. The TC approach is interested in all of the activities that the entrepreneurs in the local market assume in order to contribute to the construction of knowledge.

The GPN approach is a complementary tool to use in conjunction with the TC approach. This is because the GPN approach encompasses all the entrepreneurs, and the TC approach consists of all of the activities in the accumulation process of technological
capabilities (Kabecha, 1999). In addition, the approaches accept that the entrepreneurs in the local market seek out alternative avenues to accumulate technological capabilities, such as using external sources to assemble a t-shirt or learning by exporting (Ernst, Kim, 2002, p. 1418). These technological capabilities impact the performance of the production process as the production process is dependent on the technological capabilities of the entrepreneurs (Rasmus et. al., 2019). I combine the approaches in order to understand the construction of knowledge in the local market. Introducing the TC approach into the GPN approach may help bridge the gap between the existing literature, and reach a more comprehensive explanation for economic growth and industrial development in the local market. This is elaborated on in the third and fourth chapters.
Chapter 3: Analytical Framework and Methodologies

Introduction

The first half of the chapter discusses the application of the TC approach in relation to the research. I introduce a technological capability matrix that is tailored to the entrepreneurs in the local market. The matrix is used as a benchmark to assess all of the technological capabilities of the entrepreneurs. The second half of the chapter identifies the methodological approach and considerations applied to investigate the research questions.

Analytical Framework

Introduction

Following the assessment of the entrepreneurs in the local market, using qualitative research methods, I needed an analytical framework to engage in a more meaningful conversation about the extent to which the entrepreneurs participate in the global textile and apparel value chain in order to accumulate the technological capabilities essential to enter and be competitive in the local market. In the second chapter, I considered the application of the GPN approach – a valuable tool that encompasses all of the horizontal and vertical links between chain and non-chain actors, and how complex relations between the actors shape the global production system (Coe et. al., 2008).

Despite the valuable contributions, I soon realized that the GPN approach is “an avowedly meso-level theory that seeks to work on the cusp of structure/agency in explaining how actors of different kinds are linked into firm and sectoral-level transnational networks” (Coe, Young, 2019, p. 792). The approach is not intended to understand all of the learning avenues that the chain and non-chain actors at the microeconomic level undertake in order to accumulate technological capabilities. The approach alone cannot address the complexities of the research question. Therefore, I turned to the TC approach to use in conjunction with the GPN approach. I explain the application of the GPN approach in the fourth chapter.

The TC approach is an analytical framework that examines the process of accumulation of technological capabilities at the microeconomic level. The approach is a practical and
simple tool to assess all of the activities that the entrepreneurs in the local market undertake in order to acquire knowledge over time, and then absorb and adapt that knowledge to the local conditions (Cimoli, 2000, pp. 3-16). Unlike the GPN approach, the intention of the TC approach is to capture the construction of knowledge in the local market.

Application of the Technological Capability Approach

The TC approach aims to assess the process of accumulation of technological capabilities at the microeconomic level, that of the individual and the organization (Morrison et. al., 2007, p. 6; Cimoli, 2000, pp. 3-16). It is important to point out that in the conventional technological capability matrix the individual is identified as a self-employed person, employer, or employee, and the organization is characterized as an enterprise (Whitfield, Staritz, 2017b; Yuri, Mai, 2009). The accumulation of technological capabilities of the individual “is crucial for the formation of [technological] capabilities” for the organization (Pantic-Dragisic, 2019, p. 93). However, since most of the entrepreneurs in Mombasa and Nairobi operate as sole proprietors, I contend that there is little to no distinction between “the individual” and “the organization.” Radha Upadhyaya and Dorothy McCormick concur that, “While it is theoretically possible to make a distinction between firm-level organizational capabilities and personal entrepreneurial capabilities, in practice this is difficult to do, especially for small firms and family-owned firms” (Upadhyaya, McCormick, 2020, p. 172). Thus, I consider the individual and the organization as one in the same in the local market, and use the term “entrepreneur” as a shorthand. I provide a brief description of each of the entrepreneurs in the local market in the fourth chapter.

In order to access the process of accumulation of technological capabilities at the microeconomic level, the TC approach provides a “two-dimensional matrix of functions and levels” (Whitfield, Staritz, 2017b; Yuri, Mai, 2009, p. 8; Lall, 1992). The matrix is a practical and simple tool to show the classification of technological capabilities and the dynamism of accumulation (Yuri, Mai, 2009, p. 9). In other words, the matrix is able to capture all of the activities the entrepreneurs in the local market undertake in order to accumulate technological capabilities.
To answer the research question, I design a two-dimensional technological capability matrix of functions and levels, see Table 2. The creation of the technological capability matrix is based on the information evaluated from the existing literature and the data collected and assessed from fieldwork. First, I observe the width of functions performed. Then, I assess the level of capabilities achieved. In determining the criteria for the cells, I adhere to the standards in the local market. This is different from most technological capability matrices that adhere to the standards of the global market (Whitfield, Staritz, 2017b; Lall, 1992), or a combination of local and global standards (Yuri, Mai, 2009). In the local market, an entrepreneur is able to achieve an advanced level of technological capabilities that do not correspond to the global standards, such as the standard size of a t-shirt. Therefore, I map out the matrix to assess how the entrepreneurs accumulate technological capabilities in the local market in order to anticipate and respond to the consumer demand in the local market rather than the demand of the consumer in the regional or global market.
Table 2: Local Market Technological Capability Matrix

<table>
<thead>
<tr>
<th>Levels of TC</th>
<th>Investment (Pre-Investment and Project Execution)</th>
<th>Production</th>
<th>Innovation</th>
<th>Logistics Operations</th>
<th>Linkages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
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<tr>
<td>High-Basic</td>
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<td>Intermediate</td>
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<td>High-Intermediate</td>
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<td>Low-Advanced</td>
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<td>Advanced</td>
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<td>High-Advanced</td>
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</table>
I define the width of the functions and depth of the levels in great detail and customize the definitions to the local market. In the matrix, the columns represent the functions that the entrepreneurs in the local market need to perform in order to enter and be competitive in the local market. The functions are classified under broad categories according to their nature: investment, production, innovation, logistics operations, and linkages (Whitfield, Staritz, 2017b; Yuri, Mai, 2009). This is to ease the path for future analysis. Each function is broken down into sub-functions according to their characteristics: market research, project preparation, sourcing inputs, sourcing time, equipment, production management, equipment management, production quality control, production in pieces (standard allowed minute), logistics, trouble-shooting, product design, product development, logistics and distribution, fulfilling orders, branding and marketing, consumer standards, and consumer relations. Table 2.1 provides a short description of each of the sub-function.

<table>
<thead>
<tr>
<th>Table 2.1: Sub-Functions</th>
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<tr>
<td>Investment (Pre-Investment and Project Execution)</td>
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<td><strong>Production</strong></td>
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<td>Innovation</td>
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<td>Logistics</td>
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<td>Trouble-Shooting</td>
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<td>Product Design</td>
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<td>Product Development</td>
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<td>Logistics Operations</td>
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<tr>
<td><strong>Logistics and Distribution</strong> – The capabilities of an entrepreneur to transport, store, and package the good or service, and consider the costs and delivery methods.</td>
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<tr>
<td><strong>Branding and Marketing</strong> – The capabilities of an entrepreneur to promote a good or service. A brand is “the information – whether real or imagined, intellectual or emotional – that consumers associate with a product” based on advertisements (e.g., word-of-mouth), prior experience, and reputation (Evans, Wurster, 2000, p. 11).</td>
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Consumer Relations – The capabilities of an entrepreneur to create and sustain a positive relationship with the local consumer. This is measured in terms of the repeat orders from existing customers compared to all the orders received.

It is important to note that there is more than one way to categorize the functions and sub-functions. For example, Lall sets out three functions of firm-level technological capabilities: investment, production and linkages. He asserts that these three categories are the “basic core of functions…that have to be internalized by the firm to ensure successful commercial operation” (Lall, 1992, p. 168). In addition to these three core functions, I add innovation and logistics operations in order to better capture the complexities of the local market.

For investment, I determine that sourcing inputs and sourcing time include all of the resources available in the local, regional, and global markets. I consider the “financing and managing the sourcing of inputs and part of the transport of imports” (Whitfield, Staritz, 2017b, p. 4). For production, I make a distinction between the hard and soft skills: equipment management and production management. I define equipment management capabilities as those “to operate machinery and equipment to process inputs, and to maintain, design, and manufacture machinery and equipment” (Yuri, Mai, 2009, p. 15); whereas the production management capabilities as those “arrange production activities efficiently and effectively so as to achieve targeted performance” (ibid.). This distinction is critical in the context of the local market in which the entrepreneurs more often than not lack the capital to invest in updated equipment and machinery and accumulate technical capabilities; therefore, the entrepreneurs lean on the soft skills in order to accumulate administrative and managerial capabilities. For linkages, I determine that branding and marketing is less about elevating the enterprise and getting “access to distribution channels abroad” (de Vasconcellos et. al., 2015, p. 398), and more about the ability of the entrepreneurs to “bring their products to the
attention of potential buyers” (Upadhyaya, McCormick, 2020, p. 181). This is significant because most of the entrepreneurs in the local market promote their products via word-of-mouth. In addition, customer relations is constructive interaction with the local consumer that includes “listening and learning from customers, and translating customer needs into viable products” (Upadhyaya, McCormick, 2020, p. 182). The entrepreneurs adhere to the expectations and preferences of the local consumer rather than the global consumer.

The functions run in parallel, not in sequential order. For example, an entrepreneur can source the inputs needed for production as well as build customer relationships at the same time. The technological capability matrix presents the functions in no particular order or rank. The entrepreneurs in the local market prioritize the functions based on their individual needs. Thus, the importance of the functions is individual-specific. For example, an entrepreneur who operates online needs to achieve a more advanced level of technological capabilities in branding and marketing than an entrepreneur who works at a stall on the side of the street. Unlike the export-oriented enterprises, the entrepreneurs in the local market do not have to take into account the technological capabilities needed to meet the requirements in the global textile and apparel value chain, such as the international safety compliance or the global organic textile standard (Whitfield, Staritz, 2017b, pp. 1-2). Instead, the entrepreneurs need to concentrate on the criteria set by the local market.

The rows represent the levels of technological capabilities from basic to intermediate to advanced. The basic level of technological capabilities, or the operational and routine level, is the bare minimum criteria needed to enter and be competitive in the local market for a standard period of time. The basic level of technological capabilities is the level at which the entrepreneurs are able to operate. For example, an entrepreneur is able to use the “given or existing” processes and systems, but not “improve or produce” new ones (Yuri, Mai, 2009, p. 15). The low-basic level of technological capabilities is the condition at which the entrepreneurs teeter on the brink of becoming insolvent and ceasing production, such as an entrepreneur who struggles to source materials. These entrepreneurs are the most vulnerable to the market conditions (Diyamett et. al., 2011,
The high-basic level is a step up from the basic operation level to a basic maintenance level, such as an entrepreneur who knows how to use the existing equipment and is able to “maintain stable and continuous operation over time” (Yuri, Mai, 2009, p. 16).

The intermediate level of technological capabilities, or the adaptive level, is the level at which the entrepreneurs are “able to make minor yet original improvements” to the existing processes and systems (Yuri, Mai, 2009, pp. 16-17). For instance, an entrepreneur is able to improve the quality of a product or introduce a new design. The advanced level of technological capabilities, or the innovative level, is the level at which the entrepreneurs are able to either implement complex modifications to the existing processes and systems, or design something new and original compared to the existing processes and systems (ibid.). For example, an entrepreneur is able to create a new production process or develop a new product. Similar to the basic level of technological capabilities, the intermediate and advanced levels are broken down even more. For instance, the low-intermediate level of technological capabilities includes minor improvements to the existing technologies, and the high-intermediate level includes great improvement to the existing technologies. The same is true for the advanced level of technological capabilities.

The entrepreneurs are able to bypass levels of technological capabilities or move down from a higher level to a lower level of technological capabilities (Yuri, Mai, 2009, p. 18). With the accumulation of more technological capabilities, the entrepreneurs “are better able to make strategic choices within institutional constraints through mechanisms such as innovations and learning” (Choung et. al., 2006). For example, Takeshi Hayashi examines the industrialization process in Japan, especially the stages of technology development. He explains that individual skilled workers in China were able to make modifications to product designs until the organizations established maintenance standards (Hayashi, 1990). This demonstrates that the levels of technological capabilities do not occur in a continuous sequence.

It is important to point out that this course of categorization is indicative. Despite the criteria, “there is no universal tool to assess the levels of complexity or difficulty in an
absolute sense” (Yuri, Mai, 2009, p. 18). It is difficult to determine whether a function is simple or not. Nevertheless, I categorize the complex levels of technological capabilities from basic to advanced, rather than from operational to innovative, in order to capture the administrative, managerial, and technical dimensions of performance. For the purpose of the research project, I contend that the other categorization causes confusion as the entrepreneurs in the local market can be assigned to more than one category. For example, the technological capabilities of an entrepreneur can be routine and innovative at the same time; an entrepreneur can use an outdated sewing machine to introduce a new t-shirt design. The basic to advanced categorization is able to speak on the different dimensions of technological capabilities that overlap one another.

Meanwhile, the other categorization is more suitable to measure a sole dimension of technological capabilities, such as the technical dimension. For example, Sato Yuri and Fujita Mai create a technological capability matrix with the levels: operational, assimilative, adaptive, and innovative, see Table 3 (Yuri, Mai, 2009, p. 21). The scholars note that this representation “gives more credit to a firm that makes minor yet original improvements to low-end products with mature technology than to a firm that has mastered sophisticated given technology” (ibid., p. 18).
For the purpose of the research project, however, the matrix is designed to measure all of the dimensions of technological capabilities in the local market: administrative, managerial, and technical. This categorization is used to characterize the entrepreneurs in the local market in a straightforward manner and to assess the progression of the entrepreneurs in their pursuit to accumulate technological capabilities.

One of the most important traits of the matrix is that it “assesses the depth of the capabilities for every function…and maps capabilities in a two-dimensional surface of width and depth” (Yuri, Mai, 2009, p. 12). In other words, the matrix “portrays the characteristics of the capabilities of an individual firm by showing the patterns of cells where the firm in question fulfills the function and meets the criteria of the levels of capabilities, and where it does not” (ibid.). Although the level of technological capabilities is indicative and the list of functions is not exhaustive, the matrix paints a
picture of the knowledge, experiences, and skills in the local market. The aim is to capture the construction of knowledge in the local market.

**Conclusion**

The technological capability matrix is a practical and simple tool to map out the accumulation of technological capabilities of the entrepreneurs in the local market. This is measured in terms of the functions performed and the degrees of complexity (Lall, 1992). In the chapter, I designed a two-dimensional matrix that adheres to the standards of the local market instead of the global textile and apparel value chain. For example, in the local market, sourcing inputs is the ability to obtain the goods and services needed to operate. Meanwhile, in the global textile and apparel value chain, sourcing inputs is the ability to access “inputs from around the globe” (Whitfield, Staritz, 2017b, p. 1). This is essential because the level of technological capabilities needed to enter and be competitive in the local market is not the same as the level of technological capabilities needed to enter and be competitive in the global textile and apparel value chain.

With the matrix, I am able to define and describe the diverse levels of performance between all of the entrepreneurs in the local market. I avoid reproducing the preconceived discursive positions of the entrepreneurs, such as a tailor is a person who makes clothes to fit individual customers. Instead, I consider each entrepreneur on his or her own merits, which, in turn, allows me to accurately represent the realities of the local market.

In the fifth, sixth, and seventh chapters, I look at the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The matrix serves as a benchmark to assess all of the activities that the entrepreneurs in the local market undertake in order to accumulate technological capabilities, and is a means to understand the extent to which entrepreneurs contribute to the construction of knowledge in the local market.
Methodology and Methodological Considerations

Introduction

The remainder of the chapter outlines the methodological approach and considerations applied to investigate the research questions. Here, I recount the research experience, explaining the considerations taken and how problems were resolved.

At the start of the research process, I wanted to understand the role of the second-hand clothing market in the Kenyan industrialization experience. I was interested in the extent to which the entrepreneurs and their relationships with others in that network contributed to the economic and political development. Once I started fieldwork, I realized that my preconceived notions about the local market were off course. I discovered the existence of a versatile and vibrant market – a market that is comprised of tailors, fashion designers, and stylists that produce and reproduce textiles and apparel for the local consumer. The entrepreneurs continue the production process of the global textile and apparel value chain into the local market in order to enhance and expand their performance. Participation in the production process allows the entrepreneurs accumulate a higher level of technological capabilities. That level of technological capabilities in turn shapes the production process. I contend that this is able to explain the construction of knowledge in the local market. The local market is an integral part of the production process. With that, I reoriented the research project. I wanted to understand the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

Through qualitative research methods, with an emphasis on semi-structured interviews, I assessed all of the activities that the entrepreneurs in the local market assume in order to accumulate technological capabilities. I put the local market at the center of the analysis and consider all of the entrepreneurs in the local market as agents of change (Trulsson, 1997). The entrepreneurs are not passive nor reactive, without conscious thought, but rather responsive to the business environment. The entrepreneurs consider the short- and long-term outcomes in the context of the situation at hand. I asked questions pertaining to entrepreneurial strategies, financial behaviors, innovative
activities, operational challenges, and skills development. In doing so, I determined the extent to which the entrepreneurs contribute to the construction of knowledge in the local market.

Methodological Approach

I conducted fieldwork at two case study sites in Kenya: Mombasa and Nairobi. From September to November 2019, I conducted 52 semi-structured interviews and 11 follow-up interviews with individuals in the local market in Mombasa, see Appendix I. The interviewees included importers, wholesalers, and retailers in the second-hand clothing market; logistic officers at Arnop Logistics and Mark Riech (Africa) Ltd; educators in polytechnic training institutes, such as the Kenya Coast National Polytechnic (KCNP) and Kenya Heritage Training Institute (KHTI); high-level government officials at the Department of Trade, Tourism, and Investments, and the Inspection Department at the County Office; and stakeholders in relevant organizations, such as KAM. In addition, I distributed and collected 40 surveys that targeted retailers in the second-hand clothing market: Kongowea. In conjunction with the research, I participated in daily Swahili language classes at the Swahili Cultural Center.

From January to March 2020, I conducted 52 semi-structured interviews and 4 follow-up interviews with individuals in the local market in Nairobi, see Appendix II. The interviewees included tailors, fashion designers, and stylists in the local market; educators at fashion and design schools, such as the University of Nairobi, Mcensal School of Fashion, and Evelyn College of Design; stakeholders in relevant organizations, such as the British Council, HEVA Fund, International Trade Commission (ITC), KAM, Mettā Nairobi, and Msingi East Africa; and high-level government officials at the EPZA, the Industrialization Ministry of Industry, Trade, and Cooperatives, and the Technical and Vocational Education and Training Authority (TVETA). In addition, I conducted interviews with high-level government officials at the National Industrial Training Authority (NITA) and the Kenya National Examination Council (KNEC), who provided me with examples of the examinations. This allowed me to determine what the government considers to be the crucial or essential technological capabilities.
In February 2020, I attended the Fashionomics Africa 2-Day Masterclass hosted by the African Development Bank (AfDB), see Image 2 and Image 3. At the Masterclass, I connected with the entrepreneurs in the local market, such as the tailors in the AKT and the fashion designers in the KFCO, and participants in the Support for Indian Trade and Investment for Africa (SITA) project with the ITC. I became a student member of the KFCO in order to stay up-to-date on upcoming events in the local market. In March 2020, I attended the KAM-Amiran Sundowner themed “Securing the Future of Manufacturing Industries.” In addition, throughout the fieldwork, I participated in the seminar series hosted by the Institute for Development Studies (IDS) at the University of Nairobi.

Image 2: Fashionomics Africa Masterclass, Attendees
It is important to note that I intended to conduct research in Nairobi until May 2020, with the initial goal to collect at least 50 interviews. In Mombasa, I reached the saturation point at the 35th interview. I defined data saturation as the “repetition of thick descriptions” with no new emerging themes (Salami et. al., 2019, p. 154). In other words, I hit data saturation when the interviews did not add to the code descriptions. In Nairobi, I wanted a minimum of 50 interviews in order to compare the data derived from the 52 interviews in Mombasa. Due to COVID-19, the University of Edinburgh advised that I leave the fieldwork site. Kenya announced the first confirmed case of COVID-19 on 13 March 2020. I left on 21 March 2020, with 52 interviews and 4 follow-up interviews.

After quarantining and adjusting to COVID-19, in April 2020, I resumed conducting semi-structured interviews in order to collect additional information on the business, educational, and financial opportunities available to the entrepreneurs in the local market. Since I was no longer able to conduct interviews in person, I had to reach out to
my contacts through digital channels, such as Zoom, WhatsApp, Skype, and Microsoft Teams, in order to conduct 11 additional interviews, see Appendix III. In addition, I distributed and collected 10 surveys that targeted the tailors at Nairobi Textiles Center. From May to July 2020, I transcribed a total of 130 audio recordings. In August 2020, I imported all of the transcriptions into the data analysis software, NVivo, and coded the data. NVivo is a software program used for qualitative and quantitative data. It is more than a tool for organizing and storing data; NVivo is able to perform content and thematic analyses. First, I used NVivo to run a content analysis to produce a descriptive set of findings. In doing so, I was able to group together the opinions expressed. Then, I used NVivo to perform a thematic analysis, drawing out themes from the data that capture the perceptions of the participants. Fortunately, I did not need to terminate any of the interviews at any time. Since all the interviews were conversational, with open-ended questions, I clarified misconceptions on the spot, as well as accepted and supported open disclosures.

I made use of qualitative research methods in the form of semi-structured interviews and surveys. With the interviews, I amassed data on all of the activities that the entrepreneurs assume in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I examined the extent to which entrepreneurs engage with the global textile and apparel value chain, especially the second-hand clothes market. With the surveys, I collected information on the second-hand clothing retailers at Kongowea, and the tailors at Nairobi Textiles Center. I considered the extent to which the demographic characteristics of the entrepreneurs impact the process of accumulation of technological capabilities. I used the diverse sources of information in conjunction with one another to cross-check the data, ensure factual accuracy, and reinforce the credibility of the research project (Ekka, 2014, p. 56).

**Interviews**

Interviews are a research data-collection tool used to investigate social worlds. Interviews help the researcher discover things that cannot be directly observed, producing deeper understandings of the attitudes, experiences, and motivations at the heart of a research project (Mason, 2006). In other words, interviews provide a
contextual understanding of data, putting the “meat on the bones” (Bryman, 2006, p. 92).

Existing on a spectrum in between structured and unstructured interviews, semi-structured interviews use pre-established questions posed in an open-ended manner, permitting digression and variation (Hatch, 2002). In doing so, semi-structured interviews strike a balance between covering important topics and permitting unforeseen topics to be introduced (Kvale, 2007). The flexible nature of semi-structured interviews not only enables the researcher to probe for further information or clarification, but also gives the interviewees the latitude to explore and express their own thoughts to ultimately generate more varied responses (Flick, 2006). Per Trulsson, who conducted semi-structured interviews for his research on strategies of entrepreneurship in Tanzania, argues in favor of the research tool. He notes that semi-structured interviews allow the interviewees to “express their thoughts in the words and manner they thought suitable” (Trulsson, 1997, p. 51). Trulsson recommends that the researcher memorize the questions to ensure that the interview is more of a discussion than an interview.

Moreover, the use of semi-structured interviews is a well-established research method in the field of African Studies. After conducting research on cross-border trading in West Africa, Akin Fadahunsi advocates that semi-structured interviews be used to address questions about complex networks of entrepreneurs, especially those who operate in the informal – or semi-formal – sector (Fadahunsi, 2000, p. 251). This is due to the flexible nature of semi-structured interviews, which allows the researcher to omit questions deemed inappropriate, such as questions that refer to clandestine activities.

I conducted qualitative research in the form of semi-structured interviews because of the potential to elicit deeper understandings of the topic at hand. I conducted a total of 115 semi-structured and 15 follow-up interviews with entrepreneurs in Mombasa and Nairobi. Out of the 130 interviews, 16 occurred in a group format, with two or more participants.

Similar to other scholars, I conducted the interviews in Mombasa and Nairobi (Field, Schmidt, 2007; Tyce, 2018). Mombasa is home to the Port of Mombasa, the only
international port in the country and one of the largest ports in East Africa. It is the main point of entry for the imported materials needed in the local market, such as decorative fabrics and second-hand clothes. Located near the Port of Mombasa is one of the largest open-air markets in the African Great Lakes: Kongowea Market, see Image 4. The market provides opportunities for the entrepreneurs to accumulate the technological capabilities needed to enter and be competitive in the local market.

![Image 4: Kongowea Market](image)

Nairobi, on the other hand, is home to the largest second-hand clothing market in East Africa with more than 65,000 retailers: Gikomba Market (Nairobi City County Assembly, 2015). The market is renowned for the sale of second-hand and new clothes. Similar to Kongowea, Gikomba presents opportunities for the entrepreneurs to accumulate the technological capabilities needed to enter and be competitive in the local market. In addition, Nairobi is the self-proclaimed “next frontier” of the fashion world (Young,
It is the central business district for over 80 percent of KAM members and EPZ owners (Tyce, 2018). The city is full of entrepreneurs who continue to accumulate technological capabilities in order to enter and be competitive in the local market.

In Mombasa and Nairobi, I established connections and conducted interviews with the tailors, fashion designers, stylists, retailers, distributors, wholesalers, suppliers, and importers, see Appendix I, II, and III. The interview questions focused on entrepreneurial strategies, financial behaviors, innovative activities, operational challenges, and skills development. The main objective of the interviews was to understand the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

In addition, I established connections and conducted interviews with 21 elites, such as business, bureaucratic, and political stakeholders, see Appendix I, II, and III. The interview questions focused on policies and procedures in the textile and apparel sector over the past decade. The intention of the interviews was to establish the extent to which these policies and procedures impact the process of accumulation of technological capabilities in the local market.

Due to the nature of the research questions, I used both selective and snowball sampling to ensure that the research participants had the expertise and knowledge of the textile and apparel sector in Kenya. Selective sampling is a non-random technique in which the interviewer selects the interviewees based on their perceived relevance to the project; meanwhile, snowball sampling is a technique in which the interviewees recommend the next participant (Creswell, 2007). One of the advantages of selective sampling is that the technique provides an opportunity for snowball sampling, in which the interviewees connect the interviewer with other people who may be of interest for the research project. I reached out to some of the participants via email or telephone, and recruited others through social media platforms, especially WhatsApp – a popular platform used to advertise bales and sell merchandise. Tyce used both selective and snowball sampling techniques while conducting research on the Kenyan garment sector (Tyce, 2018).
I started the research process with the assumption that most of the entrepreneurs would be female. This assumption was based on my perception that women are more interested in clothes than men. However, I did not observe a particular disproportion in gender representation in the local market. With the selective and snowball sampling, I interviewed the entrepreneurs based on their role in the local market rather than their gender. In the end, I conducted interviews with 136 individuals: 64 males (47 percent) and 72 females (53 percent). It is important to note that I spoke with more men in Mombasa (58 percent). A potential reason for this could be the restricted access to female entrepreneurs. In Mombasa, I discovered that most of the female entrepreneurs run their enterprises from home, whereas the male entrepreneurs run their enterprises on the side of the road. In order to conduct an interview with a female entrepreneur, I depended on others to connect me. On the other side, I spoke with more women in Nairobi (60 percent). One explanation for this could be that I established connections at the AfDB Fashionomics Africa Masterclass – an initiative that focuses on female fashion designers.

I adopted a bottom-up approach to interviewing participants in the textile and apparel sector, particularly the local market, meaning that the study started with the entrepreneurs at the bottom of the value chain and ended with the entrepreneurs at the top. I conducted desk research using secondary resources in order to get a better sense of the value chain. By interviewing the entrepreneurs at the “back-end of the value chain” first, I avoided the common mistake of grouping boutiques, brokers, merchants, retailers, and vendors as the same entity (Gregson et. al., 2010, p. 847; Brooks, 2015; Hansen, 2000).

COVID

Due to the COVID-19 pandemic, I was unable to finish collecting data in person. The GOK confirmed the first case of COVID-19 on 13 March 2020 and on 20 March 2020 imposed pre-cautionary measures to prevent the spread of the coronavirus. The measures included suspending all international flights, implementing a partial lockdown with a 7:00 P.M. to 5:00 A.M. curfew, and limiting the number of people in public and private places, such as bars, markets, restaurants, schools, and transportation (Aluga,
2020). As a result, I returned to the USA, disheartened, but hopeful for virtual data collection opportunities.

After quarantining for the appropriate amount of time, I continued to conduct interviews over digital platforms, such as Zoom, WhatsApp, Skype, and Microsoft Teams. I conducted 11 interviews with individuals in the textile and apparel sector in Kenya. The interviewees included a Lecturer at Kenyatta University; the Founder and Director of Lilabare; the Co-Founder of Jokajok; Senior Investment Manager SME at the Trade and Development Bank (TDB); Administrator and Financial Analyst at HEVA Fund; the Director of the Textiles and Apparel Sector at Msingi East Africa; the Arts and Communication Manager at the British Council Kenya; the Deputy Director at Research TVETA; the National Treasurer of the Tailors and Textiles Workers Union (TTWU); the Founder of Connie Aluoch Styling Management; and the Executive Board Chair of the KFCO and the Founder of Akinyi Odongo KENYA.

Virtual fieldwork emerged in response to technological advances, enabling simulations of fieldwork to be carried out elsewhere (Maskall, Stokes, 2008). Within the context of virtual fieldwork, “virtual” is defined as “not physically existing as such but made by software to appear to do so from the point of view of the program or the user” (OED, 1998). Remote fieldwork, on the other hand, is distinct from virtual fieldwork in that the practice refers to participation in “live fieldwork at a distance and in real time,” rather than using technology to create a model or stimulation (Stokes, et. al., 2011).

Catherine Kohler Riessman asserts that the most productive mode for producing authentic and detailed data is through face-to-face interviews due to the opportunity to build rapport (Riessman, 1993). This sentiment is echoed by Janine Overcash and Ian Parker, who argue that face-to-face interviews enable the participants to have a greater stake in setting the research agenda and an opportunity to produce emancipatory outcomes, especially for marginalized groups (Overcash, 2003; Parker, 2005).

However, contrary to common assumptions, Neil Stephens contends that there is a need to consider conducting interviews via telephones. This is because telephone interviews have the potential to be a productive and valid methodological tool, especially with elite participations (Stephens, 2007). Amanda Holt agrees, stating that telephone
interviews make specific demands on the interviewer and the interviewees, resulting in a “strange situation” for the participants to bond over (Holt, 2010).

With the proper accommodations and adjustments, I agree with Stephens and Holt that remote interviews are an efficient and effective way to obtain data (Stephens, 2007; Holt, 2010). At the start of the interviews, I was able to avoid awkward silences and build rapport by sharing my experience with the COVID-19 pandemic, and vice versa. The coronavirus served as a form of commonality between the interviewer and the interviewees. For instance, in the beginning of the interview with Ria Ana Sejpal, Founder and Creative Director of Lilabare, she called the coronavirus “a big unifier” (Ria Ana Sejpal, Interview, 21 April 2020). The informants seemed keen to participate in the interviews as a form of social interaction. In a practical sense, the remote interviews gave the research participants a far greater degree of control than the face-to-face interviews (Stephens, 2007). For example, the participants were able to reschedule the remote interviews at the last minute without much hassle. For these particular participants, especially those who were busy at home with children, the ability to call back at a more convenient time was much appreciated. Furthermore, due to the nature of the questions, which concerned financial aspects, the “use of telephone enabled the participant to control the privacy of the conversation” (Holt, 2010). Unlike the interviews that occurred at the workplace, the informants felt much more comfortable discussing private or sensitive topics, especially wages.

The biggest obstacle with the remote interviews involved technical difficulties, such as poor audio and weak internet connection. However, I agree with Holt that the technical difficulties added to the “strange situation,” ultimately, strengthening the relationship between the interviewer and the interviewees (Holt, 2010). In addition, the use of new-age digital platforms with video features allowed for greater interaction through body language and facial expressions (Stephens, 2007).

Ethical Considerations and Dilemmas

“Research ethics” refers to “a complex set of values, standards, and institutional schemes” designed to minimize the potential risks for the participants and the researchers (NESH, 2006, p. 5). In other words, do no harm (Bryman, 2006; Dua,
Raworth, 2012). Daniel Hammett et. al., stress that, “ethics infuse the entire research process and require continual and reflexive engagement” (Hammett et. al., 2015, p. 85).

I recognize the obligation to identify and address the potential risks to the research participants involved before, during, and after the research project (Devers, Frankel, 2000). Therefore, prior to fieldwork, I conducted extensive research on the wider economic, political, and social contexts in Kenya to ensure that no one would be put at risk. I also obtained written authorization from the University of Edinburgh, via the Ethics Committee at the School of Social and Political Science, in order to mitigate potential risks to the researcher and research participants.

To further mitigate ethical dilemmas, I obtained verbal, informed consent at each stage of the interview process (Davies, 2008, pp. 105-128). I communicated the expectations of the research project, the rights of the participants, and benefits and risks of participation. Furthermore, I stressed that participation in the research project was completely voluntary. The informants were allowed to discontinue participation without justification or reason. I ensured that the background information and research questions were in a language that was “meaningful to participants” since the participants may not have been knowledgeable about the terminologies or theoretical debates (ibid., p. 58). Moreover, I approached consent as an ongoing process that involved continual communication with each of the informants (Kamuya et. al., 2015).

I kept in mind the concept of silent refusers, or “a situation where it is not clear whether potential participants want to join studies or those in studies want to withdraw from research, as they were not actively saying no” (ibid., p. 1). While conducting research in Kenya, Kamuya et. al., identified three inter-related rationales for silent refusals: (i) a strategy to avoid conflicts, (ii) an approach to maintain a relationship with the fieldworker, and (iii) an effort to retain study benefits (ibid.). In order to moderate silent refusers, Kamuya et. al., established a protocol in which the researchers followed up with the potential participants “up to a maximum of three times, after which he/she is considered a refusal and dropped from the study” (ibid., p. 14). I adopted a similar approach to ensure that the participants were not exploited. I developed cordiality and
trust with the informants, as well as showed research clearances, in order to encourage participation (Hammersley, Atkinson, 2007, p. 66).

When citing an interview in an in-text citation, I included the first and/or last name of the interviewee, the type of interview, and the date of the interview. For example, (Jane Doe, Interview, 1 January 2020). I applied the same format to the group interviews, including all of the first and/or last names: (Jane Doe, John Doe, Group Interview, 1 January 2020). For the group interviews with more than two participants, I wrote “et. al.” For instance, (Jane Doe et. al., Group Interview, 1 January 2020). In the case that an interviewee wished to remain anonymous, I changed the name to a pseudonym in order to protect his or her privacy. In the case that an interviewee wished for part of the interview to remain anonymous, I left out all personal information, including the name of the interviewee and the date of the interview, and wrote “name withheld” in order to protect his or her identity. For example, (Name Withheld). Otherwise, I used the chosen names of the participants throughout the thesis. The personal and research-relevant information was de-linked and stored on an encrypted, password-protected storage drive (Hammersley, Atkinson, 2007, pp. 147-157).

**Positionality**

Positionality refers to the position of the researcher in relation to the economic, political, or social context of the study. It is how both the researcher and research subjects perceive – or stereotype – the researcher based on a mix of identities, such as race, class, and gender (Robertson, 2002). A researcher is not a “unified subject, but is made up of simultaneous, multiple and positional identities” (Owens, 2003, p. 140). These identities influence the research process, including access, impact, and rapport. As Marsha Henry states, “a fieldworker’s identity does in fact impact upon the research process and product, challenging notions of researcher objectivity and neutrality” (Henry, 2003, p. 229). Throughout the research process, I reflected on how my positionality as a young, white, female, American, postgraduate student, an outsider to the Kenyan textile and apparel sector, influenced the data collection and interpretation of the data (Townsend-Bell, 2009). In particular, I evaluated four positionalities that had the greatest potential to influence or impact the ways in which the participants engaged
with and responded to the research project: age, language, socio-economic status, and race.

From the start of the research process, I was well aware of the inherent impact of my age and the ages of the research subjects on the data collection process. For example, Charlotte Aull Davies explains that younger research participants tend to assume a subordinate position in an interview, whereas elders or elites tend to dominate the interaction (Davies, 2008, p. 111). Erica Townsend-Bell shares that she confronted a number of challenges gaining access to potential participants due to her younger appearance and fashion sense (Townsend-Bell, 2009). I had a similar experience when interviewing senior-level elites at the Inspection Unit at the Mombasa County Office. The research participants sidestepped the research questions and deemed other topics as more relevant, such as “parking taxes” (James Kinara, Interview, 2 October 2019). I attempted to alleviate such problems by building rapport with the research participants and ensuring that my physical appearances were socially acceptable for the context. For instance, I dressed in a modest and professional manner for all of the interviews. To help establish trust, Trulsson recommends that researchers meet informally with the prospective participants at least three times before conducting the more formal interviews (Trulsson, 1997). Due to time restraints, I was unable to meet with each participant three times, but I strived to meet more than once in order to create confidence. I exchanged contact details (e.g., mobile telephone number, email, and social media) to continue the conversation.

In addition, I was conscious that my general lack of proficiency in Swahili posed a series of challenges, especially in terms of building trust, gaining access, and collecting reliable data. Since my native language is English and not Swahili, prior to fieldwork, I recognized the potential for miscommunication in the data collection and the data analysis processes. This is important as researchers should allow their research participants to choose the language of communication in order to promote equality (Mothibe, 1996). For example, while conducting interviews in Tanzania, Trulsson experienced some difficulties understanding whether the interviewee was referring to a man or woman since the language does not have separate terms for “he” and “she”
While my lack of expertise in Swahili did not present any significant challenges when communicating with the research participants in Nairobi, where a significant portion of the demographic speaks English, I experienced a number of expected and unexpected obstacles when interviewing the research participants in Mombasa. First and foremost, I struggled to build rapport with the retailers at the second-hand clothing market, Kongowea. The informants did not want to engage in conversation unless, of course, it was about a potential purchase. In order to establish a relationship, I hung out at the market for hours at a time, walking in between the stalls and tables, observing transactions, and engaging in small talk. I wanted the retailers to feel comfortable with me and vice versa. Only after spending hours at the market did I start conducting interviews and distributing surveys. In addition, I could not always capture the contextual nuances of the language, especially in the interviews with the tailors. For example, the word “kitambaa” is a noun that refers to “cloth,” “fabric,” or “linen,” depending on the context. To ensure accurate translation, and capture these contextual nuances, I hired Georgina Arita as a translator to review the transcriptions of the audio recordings of the interviews. Arita, Consultant at eData Solutions, has extensive experience in editing, proofreading, and transcribing audio notes. Finally, I struggled to understand specific terms used in the textile and apparel sector. For example, I never learned the word for “sewing needle” or “sindano ya kushona” in my previous Swahili courses at the University of Edinburgh. Therefore, I took classes at the Swahili Cultural Center in Mombasa in order to improve and strengthen my pre-existing language skills. At the Swahili Cultural Center, I concentrated on the terminology used in the textile and apparel sector. Moreover, I consulted with Swahili speakers to check on the meaning and phrasing of the interview questions.

I understood that my socio-economic status as a postgraduate student at the University of Edinburgh influenced the research project. Socio-economic status refers to the class of an individual or group, measured as a combination of education, income, and occupation. For example, while on fieldwork in Kenya, Matthew Tyce introduced himself as a “researcher” in order to create connections with the local textile manufacturers. These connections in turn granted him access to KAM. He is of the opinion that the “title of researcher” has the potential to open many doors (Tyce, 2019b). In Burundi, Judith
Vorath presented herself as an “inexperienced Ph.D. student” in order to appear less threatening to political elites. She explains that the political elites were more willing to answer direct questions from an “unsophisticated outsider” than a “well-prepared manager” (Vorath, 2013, p. 65). Prior to fieldwork, I recognized that being an outsider had the potential to help me be perceived as a “harmless ‘foreign’ academic rather than a threatening ‘domestic’ investigator” (Herod, 1999, p. 322). Thus, the informants “may be more open and candid about particular issues” (ibid.). Therefore, I used the status of a researcher to navigate through issues of access, such as establishing contacts with individuals in the local market (Tyce, 2019b). Similar to Vorath and Tyce, I connected with institutions, such as the British Institute in Eastern Africa (BIEA), the Swahili Cultural Center, and the IDS at the University of Nairobi, to overcome the status of an outsider and build trust in the relevant social networks. These institutions served as gatekeepers who – formally or informally – controlled access to potential participants.

Last but not least, I considered the extent to which race played a role in shaping the assumptions, perceptions, and relationships between the researcher and research participants. As a white person, I was familiar with the fact that my race gives me specific privileges, such as power vis-à-vis the research participants. This in turn has the potential to shape the data collection process, such as the research participants withholding information or bending the truth in order to stay in good graces (Jones et. al., 2012). For example, Emma Broadbent discusses issues of knowledge and power. She argues that the production of knowledge is “an expression of power relations” (Broadbent, 2012, p. 2). Leo McAvoy et. al., add that these power relations have the potential to impact the research participants. The authors describe how “African Americans have often been the subjects of research studies…yet few of these studies yielded benefits to this racial group” (McAvoy et. al., 2000, p. 483). As a result, many of the research subjects feel exploited by researchers. In Nairobi, I received a little backlash from the textile and apparel manufacturers in the local market. The research participants wanted to know in what ways the project would benefit them, citing past research projects that failed to deliver on their promises. I was met with distrust because of past experiences with the research profession. Therefore, I spent a considerable amount of time describing the objectives of the research project to each
research participants. I was honest about how the project would move forward and the limited impact that the thesis would have on them – at least in the near future. In addition, I reflected on how my race influenced and impacted those involved in the research project, especially in terms of how the interviewees answered the questions.

**Reflexivity**

When conducting semi-structured interviews, a significant pitfall to avoid is the tendency to accept statements as truth. As Hilary Arksey and Peter Knight point out, researchers “cannot assume that any entrepreneur is a privileged commentator on his or her actions, in the sense that an account of the intentions, motives, or beliefs involved are accompanied by a guarantee of their truth” (Arksey, Knight, 1999, p. 196). Researchers must be careful in interpreting the data as there is “always a risk that persons interviewed will not remember an event of the past properly” or “they will distort the information, consciously or not” (Trulsson, 1997, p. 57). In order to mitigate that risk, I researched the backgrounds of the potential research participants prior to the interview, obtained as much detail as possible to validate the interview, and underwent “cross-checking of data to reveal ambiguities” (ibid.). I cross-verified the data collected with primary and secondary sources, including, but not limited to, open-access datasets via multilateral institutions, newspapers, historical publications, government documents, and academic articles.

In addition, I employed reflexivity throughout the entire research process in order to preempt potential challenges and leverage opportunities. I reflected on “a version of what research subjects may experience” in order to gain a better understanding of the ways in which my role as the researcher influenced the interview process (Cramer et. al., 2016, p. 152). Reflexivity is important because the context of the research, such as the socio-cultural environment, has the potential to impact the interaction between the researcher and the research participants, and therefore influence the quality of knowledge produced through fieldwork (Davies, 2008).
Surveys

Surveys are a data-collection tool used to gather the opinions of a sample of the population on a wide range of issues. Surveys provide information on what people think about a particular topic (De Vaus, 2001). The tool is sometimes used as a synonym for questionnaires. However, questionnaires focus on collecting statistical information for the purpose of small-scale research projects, such as how to improve a good or service. The data is analyzed in isolation to the wider context. Surveys, on the other hand, involve collecting and analyzing the data in order to understand the bigger picture (ibid.). For example, Anthony Onwuegbuzie and Nancy Leech explain that surveys are a practical tool for research questions that require a quantitative answer, seek to understand a numerical change, or strive to determine the variables of a phenomenon (Onwuegbuzie, Leech, 2005, pp. 377, 380). Gareth Terry and Virginia Braun add that surveys are “suitable for exploring people’s experiences and their practices, their perceptions and their understandings about the research topic” (Terry, Braun, 2017, p. 15). Stephanie Wynne-Jones, who distributed surveys in Vumba Kuu, Kenya, asserts that surveys are also a valuable resource in “providing information on the layout of structures” (Wynne-Jones, 2012, p. 137). Thus, surveys are used in both qualitative and quantitative research.

I conducted qualitative research in the form of surveys because of the potential to “produce rich, varied, and textured data” on the entrepreneurs in the local market (Terry, Braun, 2017, p. 15). I designed two qualitative surveys with a mixture of multiple-choice and open-ended questions. The first survey consisted of five multiple-choice and 12 open-ended questions, see Appendix IV. I distributed and collected the survey from 40 small-scale retailers at Kongowea. The second survey contained five multiple choice and four open-ended questions, see Appendix V. I distributed and collected the survey from 10 tailors at Nairobi Textiles Center.

The surveys provided descriptive statistics about the socio-demographic characteristics of the entrepreneurs, such as education level and marital status. I used that information to determine the extent to which the demographic characteristics of the entrepreneurs impact the process of accumulation of technological capabilities. In addition, the surveys
provided additional information about the activities that the entrepreneurs assume in the local market. I used that information to assess the elements that influence the activities available, such as national policies or county regulations. The combination of semi-structured interviews and surveys allowed me to create a more comprehensive assessment of the process of accumulation of technological capabilities for the entrepreneurs in the local market.

I recruited the participants through a combination of snowball sampling and selective sampling to ensure that all of the research participants had the expertise and knowledge of the textile and apparel sector in Kenya. For the 40 small-scale retailers at Kongowea, I employed selective sampling in order to secure a purposeful sample of participants who worked at the second-hand clothing market. I found a saturation of themes, or recurring elements in the data set, from respondent 25 onwards. For the 10 small-scale tailors at Nairobi Textiles Center, I used snowball sampling in order to gain access to more available respondents due to the sensitive conditions under the COVID-19 pandemic. Tobias Oswagoo, Chair of the AKT, identified the participants and circulated the link via SurveyMonkey. I met with Oswagoo on multiple occasions to discuss the research question in-depth.

Since I applied selective sampling, rather than random sampling, I did not conduct inferential statistics with the data; the sample size was not representative of the entire population. Nor did I attempt to calculate the averages or describe the characteristics of the whole system. Instead, the purpose of the surveys was to collect detailed information on the socio-demographic characteristics of the entrepreneurs and additional information on the activities that the entrepreneurs assume in the local market. The questions pertained to age, gender, ethnicity, education level, location, and years of experience, and touched on topics related to the business environment, such as perceptions on policies and regulations, relationships with other entrepreneurs, and strategies of entrepreneurship. The surveys helped me investigate how the socio-demographic characteristics of the entrepreneurs impact the process of accumulation of technological capabilities, and the extent to which external and internal elements influence the activities available.
Similar to the semi-structured interviews, participation in the surveys was completely voluntary. The respondents were allowed to exit the survey without explanation. I obtained informed consent prior to the surveys by summarizing the objectives of the research project, and explaining how the surveys would be used. In order to keep the identities of those who took part confidential, I stored the surveys on an encrypted, password-protected storage drive (Hammersley, Atkinson, 2007).

Survey research is not without its challenges. For example, while conducting surveys in Kenya, Kamau et. al., realized that many of the local manufacturers used the terms “dozens” and “pieces” interchangeably, especially when referring to production, and failed to convert monetary values from one currency to another (Kamau et. al., 2009). This generated confusion about the scale of production. To mitigate such pitfalls, I asked a combination of multiple-choice and open-ended questions to allow the participants to provide more detailed answers in their own words. For example, I asked the respondents about the main challenges impacting their business. Moreover, I ensured that the survey questions, especially those pertaining to measurements and monetary values, were clear and easy to understand. In Kongowea, the participants were able to answer the survey questions in their preferred language: English or Swahili. Raphael Abdulmajid Igombo, Head of the Education Department at the National Museums of Kenya and the Swahili Cultural Center, edited the Swahili version.

In addition, Paul Kamau et. al., experienced a number of obstacles while collecting data from export-oriented manufacturing enterprises in Kenya. The owners of the enterprises refused to participate in surveys, perceiving the research method as an ineffective avenue for pursuing change. The owners explained that they participate in three or more surveys each year, but nothing ever seems to change (Kamau et. al., 2009). In order to alleviate such concerns, I dedicated a considerable amount of time in describing the desired objectives of the research project. I was careful not to make any promises, or hold out hopes. Instead, I disclosed how the thesis may contribute to the literature on the construction of knowledge in the local market.
Conclusion

Through a combination of semi-structured interviews and surveys, I assessed all of the activities that the entrepreneurs undertake in order to acquire the technological capabilities essential to enter and be competitive in the local market. I asked questions pertaining to entrepreneurial strategies, financial behaviors, innovative activities, operational challenges, and skills development. In doing so, I determined the extent to which the entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market.
Chapter 4: Entrepreneurs in the Local Market

Introduction

The purpose of the chapter is to review the application of the GPN and TC approaches in the research project. As explained in the second chapter, the GPN approach is a pragmatic tool to encompass all of the chain and non-chain actors in the global textile and apparel value chain, especially the local market. This is essential as non-chain actors, such as business associations and non-governmental organizations, contribute to the construction of knowledge in the local market as much as chain actors, such as tailors and fashion designers (Horner, Nadvi, 2018; Coe et al., 2008). Thus, I adopt the approach to put a name to all of the entrepreneurs in the local market, and consider the connections between each of the entrepreneurs.

As elaborated in the second and third chapters, the TC approach is a practical tool to assess all of the activities that the entrepreneurs in the local market assume in order to acquire knowledge over time, and then absorb and adapt that knowledge to the local conditions (Cimoli, 2000, pp. 3-16). I apply the approach in order to characterize all of the entrepreneurs based on their functions in the production system, or the “chain of functions” (Yuri, Mai, 2009, p. 12), rather than their common classifications, such as a fashion designer is a person who designs clothes.

By providing brief descriptions of each of the entrepreneurs in the local market based on their functions, I reveal that all of the entrepreneurs perform the same or similar fundamental functions (investment, production, innovation, logistics operations, and linkages) in all of the stages of the production system (pre-production, production, and post-production). An entrepreneur is able to design a t-shirt in the pre-production stage, put the t-shirt together in the production stage, and sell the t-shirt in the post-production stage. Alternatively, an entrepreneur is able to by-pass any part of the production system, such as design a t-shirt in the pre-production stage and sell the t-shirt in the post-production stage, with little to no involvement in the production stage. This is because the entrepreneurs in the local market wear more than one hat at a time. The entrepreneurs do not always need to seek out other entrepreneurs to perform a specific
function in the production system. Instead, the entrepreneurs are able to perform that specific function themselves.

Therefore, the primary distinction between the entrepreneurs in the local market is not the functions performed in the production system, but rather the depth of technological capabilities achieved. A higher level of technological capabilities leads to a higher level of performance in terms of functions. Thus, the level of technological capabilities is contingent on the entrepreneurs themselves and the specific nature of the activities. The chapter is a reference point for the rest of the thesis.

**Terminology**

Following Per Trulsson (1997, p. 2), I undertook a period of deliberation to determine an umbrella term for the individuals in the local market, especially the tailors, fashion designers, and stylists. In particular, I considered three terms: actor, artisan, and entrepreneur. An actor is a person who participates in or promotes a field. An actor serves as an active agent “with the capacity to take responsibility…and make decisions that result in action and achievements” (IGI Global, 2022). It is a person with the “ability to act” (Braun et. al., 2019, p. 789). That said, the term is ambiguous. Since “actions are ‘performances,’” the term is often used in a theatrical sense (ibid., p. 795).

An artisan is a person who practices in a skilled trade, such as handwoven textiles or painted ceramics (Ford, Cooper, 2016, p. 144). The person is able to produce products “either completely by hand or with the help of hand-tools or…mechanical means” (UNESCO, 2022). It is important to point out that the term suggests that the person is a specialist in his or her field with an advanced level of technological capabilities. An artisan therefore “often has different definitions of success from other small business owners” (Ford, Cooper, 2016, p. 146). The term is not applicable to a person new to the trade with a basic or intermediate level of technological capabilities.

An entrepreneur is a person who participates in “strategic planning and risk taking” (Akinyoade et. al., 2017, p. 1). An entrepreneur “challenges the existing order by [his or her] non-traditional, pathbreaking, activities” (Trulsson, 1997, p. 2). Therefore, entrepreneurship is more than starting and running an enterprise. It is “a process
through which individuals identify opportunities, allocate resources, and create value. This creation of value is often through the identification of unmet needs or [...] of opportunities for change” (ibid.).

Since the aim of the research project is to understand the extent to which the individuals in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market, I decided to use “entrepreneur” as the umbrella term. Similar to Per Trulsson, I contend that “the most important aspect of defining an entrepreneur is not defining the entrepreneur per se, but defining an entrepreneurial act” (Trulsson, 1997, p. 47). I am interested in all of the entrepreneurial activities that the entrepreneurs undertake in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

I acknowledge that the term “entrepreneur” is contentious and considered problematic by some scholars. For example, Meagher et. al., examine the “allure of entrepreneurship” via global connections as a means to promote economic transformation and social advancement of African workers (Meagher et. al., 2016, p. 476). The scholars explain that the discourse on entrepreneurship “disguise(s) rather than alter(s) conditions of low wages, unstable employment, and harsh working conditions” (ibid., p. 477). This is because the new employment opportunities being created by global connections have limited capacities to transform local economic conditions, especially “long-term improvements in the livelihoods of African workers” (ibid., p. 473). The scholars call for future studies to go beyond the mere creation of entrepreneur opportunities via global connections and “consider the patterns of connections necessary to generate rising incomes, increased productivity and local economic transformation” (ibid., p. 479).

Catherine Dolan and Dinah Rajak investigate the quest of global bottom of pyramid (BoP) initiatives to bring about inclusive markets that incorporate youth in Africa. The authors point out that BoP initiatives perceive entrepreneurs as “the vanguard of economic growth and poverty reduction… [that] promises to conjure individual agency from economic disenfranchisement, offering up entrepreneurship in place of
employment” (Dolan, Rajak, 2016, p. 514). Therefore, a primary purpose of BoP initiatives is “on the making” of the entrepreneur through the assistance of external agencies (ibid., p. 515). The authors point out that the process of producing entrepreneurs is problematic in that the attention has been shifted away from the “the failure (and profound inequalities) of the economic structures” to the failures of the youth finding “gainful employment” (ibid., p. 527). Entrepreneurship is not inclusive, but rather individualized and internalized, leaving youth responsible for “seeking their own individual solutions to the socially produced troubles” (ibid., p. 515).

Likewise, Michael Blowfield and Catherine Dolan assess the bottom billion capitalism (BBC) initiatives that aim to draw the poor in developing countries into the global markets through new models of entrepreneurship. The assumption is that business is a development agent: “when business engages in development, the poor benefit” (Blowfield, Dolan, 2014, p. 27). The scholars contend that the BBC initiatives reflect a shift in poverty discourse “from conceptions of the poor being beneficiaries of aid and development expertise to market actors – entrepreneurs – who will assume responsibility for their own development” (ibid., p. 28). In other words, the poor are recast as agents of development who can benefit by redirecting their capabilities to market opportunities. Blowfield and Dolan approach such a shift with caution as the impact of BBC initiatives “tends to be assessed in terms of instrumental value to business rather than to the poor and marginalized” (ibid., p. 35).

David Margolis considers the concept of entrepreneurship from a different perspective. He stresses that about half of all workers in the developing world are self-employed, and about two-thirds of those individuals engage in self-employment because there is no better alternative; entrepreneurship is a necessity (Margolis, 2014, p. 419). He continues that the standard definition of entrepreneurship, which emphasizes initiative and risk, does not “correspond cleanly to the choice versus necessity distinction” because all cases of self-employment require initiative to start the enterprise and all enterprises confront risk (ibid., p. 428). Therefore, entrepreneurship as a development path is unclear. Since many self-employed people do not occupy their current status by choice, entrepreneurship “may actually inhibit economic development” (ibid., p. 429).
Margolis concludes that welfare could potentially improve by shifting entrepreneurs “out of self-employment and into wage employment, if it exists” (ibid.).

Grimm et. al., agree with this assessment of entrepreneurs among the self-employed in West Africa. The scholars establish a survey to recognize three sets of entrepreneurs: top performers, the constrained gazelles, and the survivalists (Grimm et. al., 2012, p. 1355). The top performers are actually top performing entrepreneurs in terms of capital productivity from the distribution of capital. The constrained gazelles are entrepreneurs that share some characteristics with the top performers, such as education and basic management abilities, but are not successful (yet) due to external constraints, especially their business environment; whereas the survivalists are entrepreneurs with fundamentally different characters from the top performers and constrained gazelles, and are not successful (yet) due to external and internal constraints, including business and management skills. Grimm et. al., show that most of those who are self-employed make up the survivalists set of entrepreneurs, and therefore, are not “true” entrepreneurs (ibid., pp. 1353, 1357).

I do not debate or dispute the criticism that the term “entrepreneur” has received (Dolan, Rajak, 2016; Meagher et. al., 2016; Blowfield, Dolan, 2014; Margolis, 2014; Grimm et. al., 2012). I agree that the term has been applied in problematic ways that pay no attention to the conditions that give rise to self-employment or the constraints in the local market, such as the business environment or economic policies. Therefore, I do not use the term to “disguise” the local conditions (Meagher et. al., 2016, p. 477), or to distinguish the “top performers” (Grimm et. al., 2012), but rather I use the term to characterize all of the activities that the individuals assume in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I put the local market and the individuals in the local market at the center of the analysis, drawing attention to the processes and structures of the global textile and apparel value chain. Moreover, I move beyond considering the “mere creation [and acquisition] of entrepreneur opportunities” that arise from the global textile and apparel value chain, such as BoP or BBC initiatives (Dolan, Rajak, 2016; Blowfield, Dolan, 2014). I am interested in the ways in which individuals seek out and take advantage of those
opportunities in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

In addition, I accept that universally-accepted definitions of entrepreneur and entrepreneurship exist, but emphasize that “every understanding of how entrepreneurial activity is expressed, and its particular consequences…must be based upon a contextual understanding of the activities undertaken” (Trulsson, 1997, p. 2). This is because “entrepreneurs in different settings operate in different social environments and under different kinds of resource constraints, that is why the scope and outcomes of action are likely to differ significantly” (ibid.). Therefore, I consider the context in which an entrepreneur participates in activities, such as “the creation of new products and services or the use of existing products and services in new ways” (Akinyoade et. al., 2017, p. 1). This allows me to represent the realities of the local market in a more accurate manner.

It is important to note that I use the term “actors” in a general sense to refer to those in the global production network, including the entrepreneurs. This is because the phrase “chain and non-chain actors” is popular in the GPN approach (Kano et. al., 2020; Muthu, Gardetti, 2020; Coe, Yeung, 2019; Gibbon, Ponte, 2005; Kaplinsky, Morris, 2001).

**Descriptions of the Entrepreneurs in the Local Market**

**Global Production Network Approach**

In Mombasa and Nairobi, the local market is composed of a comprehensive list of complex entrepreneurs. I apply the GPN approach, specifically the technique of mapping the global production network, to visualize all of the chain and non-chain actors that compete and collaborate in the local market (Coe, Yeung, 2015). The approach is a pragmatic tool to think about all of the potential relationships (Dicken, Henderson, 2003, p. 30).

Figure 1 is an example of the global production network in the local market. The entrepreneurs in the local market engage with the entrepreneurs inside the global textile and apparel value chain. For example, an haute couture fashion designer sources materials from an international supplier. In addition, the entrepreneurs in the local
market engage with the entrepreneurs outside of the global textile and apparel value chain. For instance, a retailer hires a truck driver to transport the materials from the Port of Mombasa to Nairobi.

In Figure 1, the boxes with no colors represent all of the chain and non-chain actors outside of the local market, such as a charity shop that is located in the USA or a textile supplier that is located in China. The colored boxes represent all of the chain and non-chain actors inside the local market, such as a street vendor that is located on Moi Avenue in Mombasa. In particular, the dark blue boxes represent the textile and apparel manufacturers, such as RIVATEX; the light blue boxes represent the tailors; the green boxes represent the fashion designers; the single dark gray box represents the stylists; the teal boxes represent the apparel enterprises, including the export-oriented enterprises; and the purple boxes represent the entrepreneurs and others in the second-hand clothing market.
Figure 1: Example of the Global Production Network in the Local Market
By mapping the global production network, I reveal the extent to which the entrepreneurs in the local market engage with each other, and with the entrepreneurs inside and outside of the global textile and apparel value chain. For instance, the custom and ready-to-wear tailors source their materials from the second-hand retailers who source their materials from the charity shops. In a similar manner, the custom and ready-to-wear fashion designers source their materials from the export-oriented enterprises who source their materials from international suppliers. The entrepreneurs make use of a mixture of local and global, chain and non-chain actors in the process of accumulation of technological capabilities. It is important to point out that the tailors and fashion designers do not tend to source their materials from the local textile and apparel manufacturers. Thus, the entrepreneurs seek out resources from the global market, and support from the local market.

Moreover, I illustrate the importance of the second-hand clothing market as a source of inputs from the global textile and apparel value chain. With the exception of the machine operators, haute couture fashion designers, and stylists, all of the entrepreneurs source their materials from the retailers in the second-hand clothing market. This is because the used apparel from the global market is more accessible and affordable than the new textiles from the local market. I discuss the dynamics of sourcing inputs in the fifth, sixth, and seventh chapters.

Last but not least, I show that segmentation in the local market is limited. The local market is an alternative to the second-hand clothing market; the entrepreneurs produce more personalized collections as an alternative to mass-produced commodities. The entrepreneurs target as many consumers as possible rather than targeting specific consumers with shared characteristics, such as socio-economic status. One explanation for the lack of segmentation in the local market is the lack of materials, specifically raw and intermediate materials. As explained in the introduction, the local textile manufacturers produce 25,000 bales of cotton (5,300 tonnes) and 12 million square meters of woven fabric per annum; meanwhile, the local apparel manufacturers require 174,533 bales (38,000 tonnes) and 171 million square meters per annum for production (ACTIF, 2013, p. 32; USITC, 2009, p. 81). That means the local textile manufacturers
produce 14 percent of the raw materials and 7 percent of the intermediate materials needed to meet production in the local market. The low level of local textile production pushes the local apparel manufacturers to source materials from abroad. However, sourcing materials from global suppliers is an expensive endeavor due to the 25 percent import tax, hindering the technological capabilities of the entrepreneurs to enter and be competitive in the local market (KRA, 2021). Therefore, almost all of the entrepreneurs source their materials from the retailers in the second-hand clothing market. The entrepreneurs use the same or similar materials in production, which reduces product differentiation and shrinks segmentation in the local market.

The haute couture fashion designers serve as a possible exception. The entrepreneurs seek to enter niche markets and pursue niche marketing strategies, such as producing high-end pieces for high-end clients. For example, Ann McCreath is the Founder of KikoRomeo. She produces sustainable, luxury, handcrafted pieces that appeal to an upper-end segment in the United Kingdom (Ann McCreath et. al., Group Interview, 26 February 2020). The haute couture fashion designers target the “1 percent” (Connie Aluoch, Interview, 7 October 2020).

The ready-to-wear tailors serve as another possible exception. The entrepreneurs enter nice markets with specialized requirements, such as high visibility safety vests or school uniforms. For instance, Koome Arnold is a ready-to-wear tailor at Riera-Tex Ltd. He produces standard uniforms for the hospitality, industrial, and medical sectors, such as housekeeping uniforms and reflective vests. Koome targets “corporations, schools, [and] security companies” by distributing a detailed catalogue with descriptions and photographs of each product (Koome Arnold, Interview, 11 March 2020). The ready-to-wear tailors target a small market segment with defined and distinct characteristics.

It is important to reiterate that Figure 1 is an example of the global production network in the local market; a simplistic representation of the complex set of networks. The global production network is “a nexus of…interconnected nodes and links” that “extend spatially across national boundaries” (Coe et. al., 2008, p. 274). Each of the entrepreneurs is “embedded in much wider sets of non-linear/horizontal relationships” (ibid., pp. 274-275). Thus, the global production network is multi-dimensional in nature.
The purpose of the mapping technique is to point out all of the chain and non-chain actors, and compare and contrast the connections between them.

*Technological Capability Approach*

After mapping the global production network, I adopt the TC approach to provide brief descriptions of the entrepreneurs based on their functions. Below are five condensed tables of the data and observations collected on the entrepreneurs, in particular the primary (Table 4) entrepreneurs in the local market, an assortment of endeavors, enterprises, and establishments (Table 5) in the local market, the secondary (Table 6) entrepreneurs in the local market, and the primary (Table 7) and secondary (Table 8) entrepreneurs in the second-hand clothing market. I rewrote the descriptions in order to better reflect the realities of the local market. For example, the traditional definition of a tailor is a person who “makes, repairs, or adjusts clothes” per the specifications of the client (Cambridge Dictionary, 2021; Buckley, 1997); however, I added that a tailor designs clothes too. A tailor is able to dream up and design a piece without a pattern or requirements from the client. I did not want to reproduce the preconceived discursive positions.

The characterizations in the tables are not meant to be considered in isolation from one another because the entrepreneurs in the local market engage in multiple, interrelated activities. For instance, a fashion designer is able to be a retailer, or a tailor is able to own a micro-sized enterprise. In a similar fashion, a wholesaler is able to be a retailer, and a retailer is able to run an MSME. Therefore, an entrepreneur may be able to perform more functions than what is shown. The purpose of the tables is to provide a reference point.

Moreover, as illustrated in Figure 1, the entrepreneurs in the local market engage with the entrepreneurs in the second-hand clothing market. For example, a tailor purchases a bale from a second-hand clothing retailer. This level of engagement is a critical component in the level of technological capabilities that an entrepreneur is able to achieve. An entrepreneur that is able to establish a relationship with another entrepreneur is able to accumulate a higher level of technological capabilities. I
elaborate on the importance of such engagement in the fifth, sixth, and seventh chapters.

<table>
<thead>
<tr>
<th>Table 4: Primary Entrepreneurs in the Local Market</th>
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<tr>
<td><strong>Entrepreneur</strong></td>
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<tr>
<td><strong>Tailor</strong></td>
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<tr>
<td><strong>Fundi</strong></td>
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The fundi is either employed by a fashion designer, or self-employed. If self-employed, the fundi works on the side of the street or in the marketplace. The fundi is associated with low prices, but has a bad reputation for stitching problems, and/or stealing materials. The fundi received informal or non-traditional training.

***The term “fundis” is a mixture of English and Swahili. In Swahili, the plural form of fundi is mafundi. Nevertheless, all of the interviewees used the term, “fundis.” Therefore, the term “fundi” (singular) and “fundis” (plural) is used throughout the thesis.

| Custom Tailor | An individual who alters, mends, designs, and/or creates clothing for a specific client. A custom tailor is able to make clothes from a picture |
without a pattern or from
the imagination. The tailor
is either employed by a
fashion designer or
enterprise, or is a sole
proprietor who works at
home, at a stall or shop, in
the marketplace, or on the
side of the street. If the
tailor is self-employed,
everything is made-to-
order. The tailor does not
carry stock of
merchandise. The
merchandise is a little
more expensive than the
merchandise at the
second-hand clothing
market, but cheaper than
the clothing in stores. The
tailor learned how to stitch
in primary school and/or
from family and friends. An
increasing proportion of
tailors are pursuing a
certificate or degree in a
topic related to tailoring.

***In the past, a tailor was
a person who specialized
in clothes for men, and a
| Ready-to-Wear Tailor | An individual who alters, mends, designs, and/or creates clothing for consumers. A ready-to-wear tailor is able to make clothes from a picture without a pattern, but tends sticks to a pattern for production, or from the imagination. The individual is either employed by a fashion designer or enterprise, or is a sole proprietor who owns or rents a shop. The ready-to-

<p>|  | dressmaker or seamstress was a person who specialized in clothes for women. Now, for the most part, the term “tailor” is applied in a broad sense without reference to gender (Buckley, 1997). Out of all of the interviewees, Sister Faustina was the only one who referred to herself as a seamstress instead of a tailor (Sister Faustina, Interview, 25 September 2019). |</p>
<table>
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<tr>
<th>Fashion Designer</th>
<th>Custom Fashion Designer</th>
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<td>wear tailor carries stock of merchandise at the store, and accepts custom-made orders. The merchandise is a more expensive than from a fundi or a custom tailor, but a competitive price compared to other stores. The merchandise is a little better quality. The ready-to-wear tailor learned how to stitch in primary school and/or from family and friends, and acquired a certificate or degree in a topic related to tailoring.</td>
<td>An individual who designs and/or creates made-to-measure clothing for a specific client. A fashion designer participates in the designing process of a custom outfit. The outfit is smart casual for events, such as a dress or a suit. The outfit falls in between the quality of an haute couture and ready-to-wear pieces. The individual has basic to intermediate</td>
</tr>
<tr>
<td>Ready-to-Wear (Prêt-a-Porter) Fashion Designer</td>
<td>An individual who designs and/or creates clothing for consumers. A ready-to-wear (prêt-a-porter) fashion designer is involved with selecting the specific style of the piece, such as color and fabric. The fashion designer has the basic knowledge on how to sew. The fashion designer is either employed by an enterprise, especially a fashion house, or is a sole proprietor who works at home or a store. Depending on the size of the order, the fashion designer contracts at least one tailor, such as a fundi. The fashion designer does not mass-produce, but rather creates custom, one-of-a-kind clothing. The fashion designer holds a degree or diploma, but not always in a topic related to fashion or business.</td>
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works at home or in a store. If the fashion designer is self-employed, then he or she employs at least one tailor and carries stock of merchandise. The fashion designer holds a degree or diploma in a topic related to fashion and business.

<table>
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<th>Haute Couture Fashion Designer</th>
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<td>An individual who designs and/or creates high-end fashion for a specific client. An haute couture fashion designer is involved in the construction of a garment from start to finish, but is not always the one who does the stitching. The individual has at least the basic knowledge on how to sew, and is well-versed on the quality of stitching. The garment is made from high-quality, expensive fabric that is imported and is sewn with extreme attention to detail. The garment is expensive. The fashion designer is either employed at a fashion</td>
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<tr>
<td><strong>Stylist</strong></td>
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| **Street Vendor (or Hawker)** | An individual who purchases merchandise from another individual or enterprise, including a manufacturer or wholesaler, and sells to consumers in small quantities. A street vendor works on the side of the road, without the proper licenses or permits, but pays the daily county fee. |

| **Retailer** | An individual who purchases merchandise from another individual or enterprise, including a manufacturer or wholesaler, and sells to consumers in small quantities. A retailer works at home, or at a stall or shop, with or without the proper license or permits. |

<p>| <strong>Micro-sized Enterprise</strong> | An enterprise that produces and/or sells made-to-measure wear to consumers. The |</p>
<table>
<thead>
<tr>
<th>Type of Enterprise</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small-sized Enterprise</td>
<td>An enterprise that manufactures and/or sells made-to-measure and ready-to-wear garments to consumers, retailers, or other enterprises. The enterprise operates with 10 to 49 employees.</td>
</tr>
<tr>
<td>Medium-sized Enterprise</td>
<td>An enterprise that produces and/or sells ready-to-wear garments to consumers, retailers, or other enterprises. The enterprise oversees between 50 to 249 employees.</td>
</tr>
<tr>
<td>Large-sized Enterprise</td>
<td>An enterprise that manufactures and/or sells ready-to-wear garments to consumers, retailers, or other enterprises. The enterprise employs at least 250 employees.</td>
</tr>
<tr>
<td>Export-Oriented Enterprise</td>
<td>An enterprise that produces and sells products almost exclusively for the export market. The enterprise is foreign-owned, with one exception: Shona EPZ Ltd. The enterprise is located at an EPZ (e.g., Athi River, Kerio Valley, Kilifi, Mombasa, Nairobi, and Voi), and exempted from corporate income tax, and VAT and custom duties. The enterprise employs between 200 to 600 employees at a time, depending on the season.</td>
</tr>
<tr>
<td>Textile Manufacturer</td>
<td>An individual or enterprise that processes raw materials (e.g., cotton and rayon) into</td>
</tr>
<tr>
<td>Type</td>
<td>Description</td>
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<td>-------------------------------</td>
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</tr>
<tr>
<td>Apparel Manufacturer</td>
<td>An individual or enterprise that transforms natural and/or synthetic textiles (e.g., knitted and woven fabrics, fibers, filaments, thread, and yarn) into clothing and other accessories.</td>
</tr>
<tr>
<td>Textile and Apparel Manufacturer</td>
<td>An individual or enterprise that processes raw materials (e.g., cotton and rayon) into natural and/or synthetic textiles (e.g., knitted and woven fabrics, fibers, filaments, thread, and yarn), and then transforms those textiles into clothing and other accessories.</td>
</tr>
<tr>
<td>Specialty Shop</td>
<td>A shop (e.g., Super Best Fashion and Nameless Fashion) that purchases custom-made or ready-to-wear merchandise from overseas, and sells that merchandise to specific communities for special occasions. The owner of the shop is an individual who has family and/or friends outside of Kenya, such as in India or the United Arab Emirates.</td>
</tr>
<tr>
<td>Stand-Alone Shop</td>
<td>A shop (e.g., World Designers) that sells ready-to-wear collections to consumers. The owner of the shop designs and manufactures the main collection. It is not unusual for the shop to receive custom and made-to-measure orders. In addition to the main collection, the shop sells collections from other fashion designers and imported</td>
</tr>
<tr>
<td>Store Type</td>
<td>Description</td>
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<td>----------------------------</td>
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</tr>
<tr>
<td>Anchor Store</td>
<td>A store (e.g., Ithira) that sells ready-to-wear collections to consumers. The owner of the store designs and manufactures the collection. It is not unusual for the shop to receive custom and made-to-measure orders. The shop is located in a shopping mall.</td>
</tr>
<tr>
<td>Single-brand Store</td>
<td>A store (e.g., VIVO) that sells ready-to-wear collections to consumers. The owner of the store designs and manufactures the collection. The store does not accept custom or made-to-measure orders. The store is located in at least one shopping mall.</td>
</tr>
<tr>
<td>Multi-brand Store</td>
<td>A store (e.g., LC Waikiki, Truworths, and Woolworth) that sells ready-to-wear collections to consumers. The owner of the store imports all of the clothes from Asia, Europe, or the Middle East. The merchandise is available in standard sizes and colors. The store does not accept custom or made-to-measure orders. The store is located in at least one shopping mall.</td>
</tr>
<tr>
<td>Department Store</td>
<td>A store (e.g., Deacons and No Maneno Bazaar) that sells mass-produced, ready-to-wear products to consumers. The owner of the department store imports all of the accessories that complement the collections. The shop is located in a commercial building or on the side of the road, such as a kiosk.</td>
</tr>
</tbody>
</table>
Supermarket

A store (e.g., Nakumatt, Nivas, and Tuskys) that sells mass-produced, ready-to-wear products to consumers. The owner of the store imports all of the clothes from Asia or the Middle East. The merchandise is available in standard sizes and colors. The store does not accept custom or made-to-measure orders. In addition to clothes, the store sells food and household goods to consumers.

International Supplier

A person or company that provides and/or sells the materials (e.g., textiles, apparel, accessories, and equipment) needed to produce the end product to the entrepreneurs in the local market. The international supplier is located outside of Kenya, such as in East Africa, Asia, or the Middle East.

<table>
<thead>
<tr>
<th>Table 6: Secondary Entrepreneurs in the Local Market</th>
</tr>
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<tbody>
<tr>
<td>Association</td>
</tr>
<tr>
<td>An organization of people with shared interests who work together for a particular purpose, such as the AKT, KAM, and KFCO.</td>
</tr>
</tbody>
</table>
1. The AKT protects the rights of tailors, especially those located at Nairobi Textiles Center. The association negotiates the rent agreement, working hours, etc. The association is primarily located in Nairobi, with a few contacts elsewhere, and does not have a website, but rather communicates via WhatsApp. The registration fee is 300 KSH (circa 2.78 USD); no annual membership fee.

2. KAM is a business association that represents manufacturers, including those in the textile and apparel sector. The association collaborates with stakeholders, including the government, to create a competitive business environment. The association organizes a number of events each month, such as networking workshops and mentorship initiatives, capability building programs, and direct technical assistance, and invites members to place bids on projects. The association is headquartered in Nairobi, with seven other regional offices, and is active on their website and social media.
accounts. The annual membership fee is based on the turnover of the applicant (e.g., if the annual turnover is below 20 million, the member owes 25,520 KSH (circa 236.73 USD) per annum) (KAM, 2019).

3. The KFCO is an advocate for fashion designers and other stakeholders in the textile and apparel sector, including the tailors. The council engages with the government to push for favorable policies in the textile and apparel sector. The association keeps all of its members up-to-date on industry related topics, such as current market trends or legislation, and organizes webinars and workshops each month. The council is primarily located in Nairobi, but plans to expand. The KFCO is active on social media and WhatsApp, and runs a website. The annual membership fee for self-employed individuals is 3,750 KSH (circa 34.79 USD) and for enterprises is 7,500 KSH (circa 69.57 USD) (Kenya Fashion Council, 2021).
| **Partner** | An organization, such as British Council, Fashionomics Africa, HEVA Fund, Mettā Africa, Msingi East Africa, and SITA Nairobi, that is dedicated to assisting the entrepreneurs in the textile and apparel sector, especially the fashion designers. The partner invites the fashion designers to participate in incubators, masterclasses, and workshops. The partner aims to create a supportive community of fashion designers. |
| **Ministry of Industrialization, Trade, and Enterprise Development** | A department in the national government that aims to create a competitive cooperative, enterprise, and industrial sector. The department considers legislation that aims to improve the business environment, such as increasing market access or promoting MSMEs. The department allocates special economic zones, monitors the Buy Kenya, Build Kenya initiative, and organizes the Constituencies Industrial Development Centers (CIDCs) program (Hezekiah Bunde Okeyo, Interview, 4 March 2020). |
| **Registrar of Companies** | A business registration service under KenInvest that approves the Certificate of Registration via the eCitizen Online Portal for individuals interested in starting and running a business in Kenya. The Registrar of Companies recognizes six types of business entities: sole |
proprietorships, partnerships, limited liability partnerships, local companies (public or private), business societies, and foreign companies. The Registrar of Companies considers applications with a permanent address, revenue stream, and taxable income (KenInvest, 2021a, 2021b).

| Kenya Revenue Authority | An agency of the national government that assess, collects and accounts “all revenues due to government in accordance with the national laws” (KRA, 2021). The authority collects the 30 percent resident corporate income tax or the individual income tax, as well as the standard VAT rate of 16 percent, via iTax, from all of the individuals in the local market. |

| Importer | An individual who brings in containers of second-hand clothing and sells the merchandise at competitive prices to wholesalers, retailers, shops, and street vendors. An importer sells the second-hand clothing in the entire container or a specific unit of bales. The importer has access to capital and commercial links to the Global North or East Asian countries, such as China, India, Pakistan, UK, or the |
USA (Brooks, 2012). The importer is male.

***An unknown proportion of importers engage in illicit trade, bringing in new clothing under the title importers.

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
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</table>
| Wholesaler    | An individual who purchases containers or bales from importers, and sells those bales to retailers. A wholesaler has connections with at least two to three importers, and employs between 10 to 20 individuals, including warehouse managers and supervisors, administrative staff, carriers, truck drivers, and security agents. There are three tiers of wholesalers:  
1. A small-scale wholesaler who sells between 50 to 100 bales per month.  
2. A medium-scale wholesaler who sells 150 to 300 bales per month.  
3. A large-scale wholesaler who sells 400 to 600 bales per month (Field, Schmidt, 2007). |
<p>| Retailer      | An individual who purchases between one to three bales from wholesalers and sells the merchandise to consumers at home, at a stand-alone shop, permanent or temporary, or on the side of the street. The retailer sells the merchandise “as is” with minor exceptions, such as ironing a t-shirt in order to increase the price (Ria |</p>
<table>
<thead>
<tr>
<th>Auxiliary</th>
<th>Mueke, Interview, 1 October 2019; Raphael Abdulmajid Ighombo, Interview, 30 September 2019).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary</td>
<td>An individual who assists with the collection and distribution of second-hand clothing, including, but not limited to, bag makers, brokers, cameramen, carriers, security agents, and truck drivers. For example, a carrier loads-and-unloads bales for an importer or a wholesaler; whereas a security agent prevents theft during the day and protects the storage units at night.</td>
</tr>
</tbody>
</table>
| MSME     | A micro-, small, and medium-sized enterprise that either:  
1. Alters second-hand clothing for a client, such as hemming a pair of pants or taking in the waist of a dress.  
2. Mends second-hand clothing for a client, such as repairing a hole in a t-shirt or replacing a button.  
3. Decorates second-hand clothing for a client, such as replacing the sleeves of a t-shirt with kitenge or embroidering a dress.  
4. Purchases second-hand clothing from a retailer or wholesaler, and sells the merchandise at a marked-up price to consumers. |
Table 8: Secondary Entrepreneurs in the Second-Hand Clothing Market

<table>
<thead>
<tr>
<th>Department of Inspectorate</th>
<th>A department in a county office, such as Mombasa or Nairobi, that is responsible for ensuring that all of the individuals in the second-hand clothing market have the appropriate licenses and enforcing security measures in second-hand clothing market.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Trade, Tourism, and Investments</td>
<td>A department in a county office, such as Mombasa or Nairobi, that is responsible for providing an “enabling environment for trade and investment” (Mombasa County, 2021). The department allocates and rents spaces (e.g., tables and stalls) to individuals in the second-hand clothing market. The department monitors the payments each month and collects the daily fees (50 KSH (circa .43 USD)). In addition, the department administers the licenses and permits, including the single business permits.</td>
</tr>
</tbody>
</table>

All of the tables above serve as a starting point to understand the roles, relationships, and related activities that the entrepreneurs undertake in order to accumulate the technological capabilities required to enter and be competitive in the local market. The list is by no means exhaustive, but covers the most common individuals in Mombasa and Nairobi.

As mentioned at the start of the chapter, the tables are not meant to be considered in isolation from one another. I adopted the TC approach to provide brief descriptions of the entrepreneurs based on their functions, such as their ability to operate an automatic sewing machine or assemble a t-shirt. However, the entrepreneurs in the local market
wear more than one hat. A tailor is able to be a retailer, and a fashion designer is able to be a wholesaler. For instance, Janet is a fashion designer at Jokajok and a wholesaler at Gikomba. Due to her connections with importers in the second-hand clothing market, she is able to accumulate a higher level of technological capabilities in sourcing inputs and sourcing time compared to other fashion designers. She has greater access to resources than other entrepreneurs (Janet et. al., Group Interview, 13 March 2020). In that sense, the table does not recognize heterogeneity among the entrepreneurs in the same group. The purpose of the tables is to paint an overall picture of the entrepreneurs in the local market and serve as a reference point for the rest of the thesis.

Conclusion

The purpose of the chapter was to show the application of the GPN and TC approaches in the research project. The GPN approach is a pragmatic tool that considers all of the entrepreneurs and their potential connections in the local market; whereas the TC approach is a practical tool that covers all of the activities that the entrepreneurs assume in order to enter and be competitive in the local market.

In the chapter, the combination of the approaches allowed me to present a more accurate profile of each of the entrepreneurs in the local market. I described all of the entrepreneurs based on their functions rather than their common classifications. This showed that all of the entrepreneurs perform the same or similar functions in the production system. For example, a tailor draws a dress design at a fashion house (pre-production stage), and sews the sleeves of a t-shirt at an EPZ enterprise (production stage). In a similar manner, a fashion designer sketches a pattern of an evening gown at his or her house (pre-production stage), and stitches a suit at a workshop (production stage). All of the entrepreneurs in the local market wear more than one hat.

Since all of the entrepreneurs perform the same or similar functions, the primary distinction between them is their level of technological capabilities. The entrepreneurs participate in activities in order to accumulate a higher level of technological capabilities. This translates to a higher level of performance in terms of functions. In the fifth, sixth, and seventh chapters, I explain the process of accumulation of technological
capabilities and elaborate on the correlation between technological capabilities and the performance of functions.

The chapter is a reference point for the rest of the thesis. It is important to note that the descriptions of the entrepreneurs are not intended to be precise, but rather generalizations and explanations about the data collected, including observations. These generalizations and explanations frame the discussion around the research questions and sub-research questions.
Chapter 5: Technological Capabilities in the Local Market

Introduction

The aim of the chapter is to assess all of the technological capabilities of the entrepreneurs in the local market. I make use of the two-dimensional technological capability matrix designed in the third chapter (Table 2) to evaluate each of the entrepreneurs. I determine the width of functions that each of the entrepreneurs performs in the local market (investment, production, innovation, logistics operations, and linkages) and the level of capabilities that each of the entrepreneurs achieves with each function (basic, intermediate, and advanced). Based on the data and observations collected on fieldwork, I create a two-dimensional technological capability matrix for each of the entrepreneurs in the local market.

Then, I classify the entrepreneurs into one of three categories: tailors (machine operators, fundis, custom tailors, and ready-to-wear tailors), fashion designers (custom fashion designers, ready-to-wear fashion designers, and haute couture fashion designers), and stylists. I use the individual matrices to calculate the mean rank for each of the categories in order to paint a picture of the construction of knowledge in the local market. For example, the average ready-to-wear fashion designer achieves a basic level of technological capabilities in equipment management. This is because the entrepreneur does not work with the equipment on the ground on a daily or even weekly basis.

I am able to make use of the technological capability matrix to reveal the ways in which the entrepreneurs in the local market work with the resources available in order to meet the expectations and preferences of the local consumer. In the local market, most of the resources trickle down from the global textile and apparel value chain, such as the export and import markets. The export market is the source of new equipment and finished fabrics; the import market is the source of used equipment and second-hand clothes. For example, a tailor replaces the cuffs on a second-hand sweater with kitenge in order to achieve a higher level of technological capabilities in consumer standards. The entrepreneurs in the local market navigate and negotiate the opportunities that arise from the global textile and apparel value chain to produce and reproduce clothes.
for the local consumer. The matrix is a practical tool to examine the extent to which the entrepreneurs take advantage of the opportunities in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. This reveals the extent to which the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that production process.

**Critical Engagement with the Literature on Technological Capabilities in the Textile and Apparel Sector**

There is a burgeoning body of literature on the capabilities of the entrepreneurs in the textile and apparel sector. The literature is not tied to the TC approach per se, but rather considers the concept of capabilities in the broadest sense (e.g., the ability to do something) in distinct scenarios (Whitfield et. al., 2020; Hall, 2018; Apunda et. al., 2017; Kyejjusa, Romjin, 2017; Jennings, 2015; Prag, 2013; Sylvanus, 2013; Entwistle, 2009; Morrison et. al., 2007; Rabine, 2002; Hansen, 2000; Kabecha, 1999).

For the purpose of the research project, I break down the literature into three scenarios: (i) the correlation between the level of capabilities of the entrepreneurs and that of functioning in the textile and apparel sector; (ii) the capabilities of the entrepreneurs to compete in the global textile and apparel value chain; and (iii) the capabilities of the entrepreneurs to represent and rethink cultural identities. I engage with each of these scenarios, and elaborate on the extent to which I contribute to the literature.

A substantial strand of the literature is concerned with the correlation between the level of capabilities of the entrepreneurs and that of performing in the textile and apparel sector (Apunda et. al., 2017; Jennings, 2015; Entwistle, 2009; Kabecha, 1999). For instance, Joanne Entwistle evaluates the extent to which the entrepreneurs in the fashion market (e.g., bookers, models, and model agencies) promote an haute couture or high-end fashion product – at least long enough for that product to enter into the spaces of production, distribution, and retail. She contends that the entrepreneurs “contribute to the production and circulation of fashion” (Entwistle, 2009, p. 18). This is because entrepreneurs accumulate capabilities “out of a range of formal tools,
procedures, mechanisms, as well as informal practice and conversations” (ibid., p. 108). These capabilities enable them to construct “something ‘economic’ (a business geared to profit)…out of otherwise non-economic i.e. ‘cultural,’ qualities (style, aesthetics, value, etc.)” (ibid., p. 23). Thus, the entrepreneurs accumulate the capabilities to define and determine what constitutes as an haute couture or high-end fashion. The entrepreneurs “configure the high fashion world” (ibid., pp. 18-19).

In a similar manner, Helen Jennings considers the level of capabilities of the next generation of fashion designers in Africa, especially in regard to performance in the fashion market. She explains that the fashion designers “are grounded in traditions but exposed to international tastes, thereby allowing them to both satisfy local demand and ignite interest abroad” (Jennings, 2015, p. 51). The collections “strike a balance between global seasonal trends and local inspirations, offering fashion that feels both fresh and authentic” (ibid.). Thus, the fashion designers accumulate the level of capabilities that is called for to make “desirable, well-made, well-marketed collections” (ibid.). That said, Jennings warns that the fashion designers “struggle to produce a consistent product to high standards within the timeframes and price points required to fulfill significant orders” (ibid., p. 53). This is because of the “lack of formal fashion training facilities,” which in turn “creates weaknesses in all aspects…from pattern cutting and styling to marketing and public relations” (ibid.). Jennings recommends that African governments take steps to strengthen and support the capabilities of the fashion designers.

Edwinah Amondi Apunda et. al., evaluate the technical knowledge and technical skills development of the custom tailors in the Kenyan informal sector. The authors assert that the tailors pursue traditional apprenticeships to accumulate the “basic technical skills for immediate application to ongoing tailoring activities,” such as how to take body measurements or cut and sew garments; however, the tailors do not accumulate the “technological knowledge that underpins the trade” (Apunda et. al., 2017, p. 341). In other words, the custom tailors who undertake the traditional apprenticeships lack the capabilities to move up in the global textile and apparel value chain. This in turn “perpetuates the cycle of basic and limited technical skills transfer to apprentices, poor
performance and poverty among tailors” (ibid.). The authors conclude that the custom tailors “require interventions which provide them with opportunities,” such as formal vocational training, to upgrade their technical skills and accumulate technological knowledge (ibid., p. 358).

Likewise, Wanjau wa Kabecha examines the technological capabilities of the micro-enterprises in the Kenyan informal sector, especially capabilities in innovation, and technology adaptation and development. He explains that technological capabilities exist in the textile and apparel sector, but in low levels. This is due to the lack of resources, low levels of education and skills, and over-dependence on the formal sector (Kabecha, 1999). He continues that the micro-enterprises express their innovative capabilities “through the imitation of products from the formal sector and production of simple tools” (ibid., p. 124); however, lack the technological capabilities to “grow into small or medium enterprises” (ibid., p. 117). To enhance their technological capabilities in the informal sector, the micro-enterprises must invest more “in terms of know-how [research, product development] and development of appropriate tools and machinery” (ibid.). Kabecha recommends the creation of technology centers to assist the sector to upgrade, such as through the dissemination of information.

Sarah Kyejjusa and Henny Romijn consider the capabilities of female entrepreneurs in rural Uganda. Their research shows that the entrepreneurs “lack the capability and information to access markets that offer growth potential for their business,” such as avenues to innovation (Kyejjusa, Romjin, 2017, p. 2). This is because the women “are less privileged and often have limited resources and edification” when compared to their male counterparts (ibid.). Thus, the entrepreneurs “are solely focused on trying to find customers in their immediate environment” (ibid.). In other words, the entrepreneurs are “caught in a cycle of poverty” or “stuck…at a tiny scale” (ibid.). The entrepreneurs pursue entrepreneurial activities as a means of survival rather than as a means to advance their capabilities.

The problem with the strand of literature on the correlation between the level of capabilities of the entrepreneurs and that of functioning in the textile and apparel sector is that special attention or prominence is paid to those at the front-end of the global
textile and apparel value chain. There is an emphasis on the fashion designers and the related entrepreneurs in the fashion world. This is because the fashion designers tend to produce at a larger scale. Even the academics who look at the entrepreneurs at the back-end of the global textile and apparel value chain depreciate or devalue their capabilities (Apunda et. al., 2017; Rabine, 2002; Kabecha, 1999). This is because these academics consider the entrepreneurs at the back-end as "more reactive to global value chain participation" than the entrepreneurs at the front-end (European Central Bank, 2019, pp. 6-7). The entrepreneurs at the back-end of the global textile and apparel value chain react to the activities at the front-end of the global textile and apparel value chain.

I disagree with that conceptualization. I assert that the entrepreneurs at the so-called "bottom of the global value chain" are not passive or reactive but rather responsive to the activities of the global textile and apparel value chain. The entrepreneurs in the local market do more than “adapt to the new global conditions of competitions” and “appropriate new economic and political changes” (Prag, 2013, pp. 104, 116), or “acquire basic technical skills for immediate application” (Apunda et. al., 2017, p. 341), or “imitate what was produced” (Kabecha, 1999, p. 122). The purpose of the chapter is to show that the entrepreneurs in the local market accumulate an intermediate to advanced level of technological capabilities in almost all of the functions. The entrepreneurs participate in all of the stages of the production system, from the procurement of input sources to the final sale of the end product, which allows them to enhance their knowledge and expand their skill set. The entrepreneurs come up with innovative concepts and ideas to improve their economic performance. More than that, the entrepreneurs reimagine and reshape the local market, serving as agents of change who contribute and challenge the current conditions (Trulsson, 1997, p. 3).

A sizable strand of the literature is interested in the capabilities of the entrepreneurs in the textile and apparel sector to compete in the global textile and apparel value chain, such as the production of exports or the importation of second-hand clothes (Hall, 2018; Prag, 2013; Sylvanus, 2013; Sylvanus, Axelsson, 2010). For example, Nina Sylvanus examines the extent to which the Dutch wax print manufacturers compete with the
Chinese wax print manufacturers in the Togolese textile and apparel sector. She shares the example of the Dutch manufacturer: Vlisco. In 2014, Vlisco launched the Connoisseurs of Style – a brand protection campaign designed to promote the Vlisco name as the authentic and original producers of wax prints or *pagnes* (Sylvanus, 2013, p. 70). In response to the recent stream of Chinese counterfeits, the campaign raised awareness about the “markers of authenticity,” such as a design number or a trademarked monogram (ibid.). However, the campaign did not resonate with the consumers in the local market. The consumers welcomed the shift from Dutch to Chinese wax prints, stating that the imports “disenfranchised” the market and allowed them to “participate in changing fashion styles” on their terms, “freed from the dictate of originality” (ibid.). In addition, the Chinese wax prints cost a tenth of the price of the original Dutch wax prints. Sylvanus claims that Vlisco did not have the capabilities to compete with the Chinese counterfeit wax prints.

In a similar manner, Ebbe Prag concentrates on how the “Mama Benz” traders compete with the low-cost Chinese textiles in the Beninese textile and apparel sector (Prag, 2013, p. 103). He contends that the importation of Chinese textiles shifts the balance of power between the networks of traders, “reconfiguring relations between textiles traders, state officials, and international companies” (ibid., p. 101). This is because the textiles “change consumer trends and challenge the commercial aristocracy of the so-called Mama Benz traders” (ibid., p. 103). In turn, the Mama Benz traders “struggle to leverage support from key global firms and state officials to respond to the new configuration of economic power and opportunity” (ibid., p. 102). Prag explains that this economic and political change “produces winners and losers” in the textile and apparel sector in which “some people are able to take advantage of the new situation and accommodate to the structural changes of competition; others are not” (ibid., p. 103). The Mama Benz traders do not have the “knowledge, flexibility, and aptitude to maneuver in the political and economic realities” of the Beninese textile and apparel sector (ibid.).

Linn Axelsson and Nina Sylvanus look at the ways in which the Ghanaian women traders compete with the Chinese wax prints in the textile and apparel sector in Ghana.
Unlike the Dutch manufacturers in Togo, or the Mama Benz traders in Benin, the Ghanaian women traders perceive the Chinese wax prints as “new opportunities…to circumvent the hierarchical organization in the long-standing trade networks based on European and Ghanaian wax prints” (Sylvanus, Axelsson, 2010, p. 136). These traders, who are otherwise excluded from the market segment, “actively strategize in navigating the new spaces in the competitive textile sector” and “adopt different strategies,” such as defending authentic wax prints and marketing Chinese replicas (ibid., pp. 136-139). The traders “juggle their anti-Chinese rhetoric and everyday economic interests” in order to redefine their position in the market (ibid., p. 139). Thus, the Ghanaian women traders accumulate the capabilities needed to enter and be competitive in the textile and apparel sector.

It is important to note that the competition is not limited to China. For example, Kenneth Hall assesses how the local artisans competed with imported cloth from India in the textile and apparel sector on the Island of Java from 1600 to 1850. Hall asserts that the imports did not undermine the local textile artisans, but rather “created opportunities for local adaptations” (Hall, 2018, p. 203). He explains that local artisans reoriented themselves to “take advantage of the early nineteenth-century accessibility of imported machine spun thread, new metal hand-stamp technology and inexpensive undecorated quality industrial cotton sheeting” (ibid.).

Likewise, Lindsay Whitfield et. al., examine the extent to which firms in Ethiopia, Kenya, and Madagascar accumulate technological capabilities in order to enter and be competitive in the textile and apparel export market. The scholars elaborate that:

Fulfilling the minimum requirements to be able to enter GVCs at the subcontracting function requires investment, production process, and product capabilities that are challenging for many low-income country firms. Firms need to be able to produce and deliver according to the specifications of buyers in terms of price, quality, reliability, delivery time, flexibility, and compliance with safety, social, and environmental standards. (Whitfield et. al., 2020, p. 203).
Unlike the Kenyan and Madagascan firms, the Ethiopian firms fail “to build the required capabilities to become competitive in producing basic products such as T-shirts and polo shirts” (ibid., p. 206). Moreover, the firms “struggle to improve production capabilities and create the end-market and linkages capabilities required for exporting” (ibid.). Whitfield et. al., conclude that this is because there is “a large gap between their initial capabilities and the capabilities required to become internationally competitive” (ibid.). The Ethiopian firms do not have the technological capabilities essential to enter and be competitive in the textile and apparel export market.

Leslie Rabine considers how the fashion designers in African communities around the world compete with each other. She contends that the competition leads to capabilities in innovation, such as “the adaptation of western fashion magazines” and “the combination of ‘ethnic’ designs with dramatic new colors and techniques;” but at the same time limits artisanal capabilities due to the “interrelationship and tensions that exist between these popular and mass cultures” (Rabine, 2002, pp. 54, 97, 114). The fashion designers face an authenticity paradox in their role: how to mass-produce authentic and artisanal products? In order to enter and be competitive in African communities, the fashion designers need to “be ‘authentic’ among culturally conscious consumers” (ibid., p. 112). This means that the fashion designers must accumulate the capabilities to produce through “processes guided by aesthetics and respect for craft, as well as by economic gain” (ibid., pp. 112-113).

Similar to the scholars above, I seek to understand how the entrepreneurs in the local market navigate and negotiate the opportunities in the global textile and apparel value chain in order to accumulate technological capabilities. The entrepreneurs in the local market encounter a “dramatic penetration” from the global textile and apparel value chain, especially with the importation of second-hand clothes (Sylvanus, Axelsson, 2010, p. 132). This penetration provides opportunities for the entrepreneurs to enhance and expand their technological capabilities. An issue I have with the literature (Whitfield et. al., 2020; Hall, 2018; Prag, 2013; Sylvanus, 2013; Sylvanus, Axelsson, 2010) is the assumption that the global textile and apparel value chain is the prime avenue to accumulate technological capabilities. The assumption is the global textile apparel value
chain, especially the production of exports, provides an “economic spark” or “market diversification” for the entrepreneurs in the local market to move up or down the global textile and apparel value chain (OECD, 2015, p. 287; Hufbauer, Wong, 2005, p. 4). The purpose of the research project is to pull apart that assumption. Participation in the global textile and apparel value chain is a piece of the puzzle, but not the whole picture. I assess all of the avenues that the entrepreneurs pursue in order to accumulate technological capabilities and how the entrepreneurs use those capabilities to enter and become competitive in the local market.

The last strand of literature is interested in the capabilities of the entrepreneurs to support and represent their cultural identities (Rovine, 2015; Allman et. al., 2004; Hansen, 2000). For example, Karen Tranberg Hansen evaluates the extent to which the Zambian traders in the textile and apparel sector “take a garment and alter it to something entirely local, something that adheres to current cultural norms of etiquette” (Hansen, 2000, pp. 2-5). She explains that the second-hand clothing market provides a space for the traders to meet the needs of the consumers, mediating collective and individual identities. This is because second-hand clothes “is not just any commodity, but one that mediates between self and society” (ibid., p. 4). The second-hand clothing market is entangled in the cultural, economic, and political landscape of Zambia.

In a similar manner, Jean Allman et. al., assess the power of dress, the power of fashion, in the context of Africa and African communities. The authors note that “the power of dress, the power of fashion [is] an incisive political language capable of unifying, differentiating, challenging, contesting, and dominating” (Allman et. al., 2004, p. 1). This incisive political language is able to “open up new dimensions” of cultural, political, and social change (ibid., pp. 4-6). The authors draw attention to the Western-style clothes in the second-hand market. While merchandise is foreign in origin, the authors contend that the “gendered, social, and political meanings were constructed locally, in local circumstances, in local fields of power” (ibid., pp. 6, 69). The retailers in the second-hand clothing market impart “meanings of Western-style dress in local African contexts” (ibid., p. 7).
Victoria Rovine continues that cloth serves as “a medium by which to declare local identities and a means of ‘trying on’ new identities” (Rovine, 2015, p. 189). She examines the extent to which the Malian mud cloth (bogolan) provides opportunities for Malian fashion designers to “explore the implications of adaptations, revivals, and transformations of a distinctively African form via fashion” (ibid., p. 190). She explains that the local fashion designers either “seek to re-create or update Malian traditions, deliberately basing their work on clothing and textile styles associated with indigenous Malian culture” or “view their work as a project of modernization, adapting bogolan’s patterns and dying techniques to garments aimed at a contemporary international market” (ibid., p. 197). All the same, the cloth is a source of identity and inspiration for the local fashion designers, providing an opportunity for them to accumulate technological capabilities in innovation.

For the purpose of the research project, I consider the ways in which the entrepreneurs in the local market conceptualize their cultural identities, and the extent to which that conceptualization impacts the process of accumulation of technological capabilities. I do not debate or dispute the literature on the incorporation of cultural identities. The importance of cultural identities cannot be understated. Instead, I contribute to the discussion with an in-depth assessment of the accumulation of technological capabilities in the local market. I look at how the entrepreneurs in the local market accumulate technological capabilities and how the entrepreneurs use those technological capabilities to satisfy the expectations and preferences of the local consumer.

To address the limitations in all three strands of the literature, I characterize all of the technological capabilities of the entrepreneurs in the local market. I do not concentrate on the entrepreneurs who work at the top of the ladder in the global textile and apparel value chain, but rather those who work at the bottom. I put the local market and the entrepreneurs in the local market at the center of the analysis. The entrepreneurs in the local market are not passive nor reactive, but rather active and responsive to the global textile and apparel value chain. The entrepreneurs contribute to the construction of knowledge in the local market.
Under the TC approach, I look at how the entrepreneurs in the local market navigate and negotiate the opportunities in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market, such as opportunities to manufacture products for the export market, or to purchase merchandise in the second-hand clothing market. I assess all of the avenues that the entrepreneurs assume in order to accumulate technological capabilities. This is important as the accumulation of technological capabilities is not automatic nor inevitable, but rather “the result of purposeful activities” (Morrison et. al., 2007, p. 7). The entrepreneurs participate in activities in order to accumulate technological capabilities; those technological capabilities in turn enable the entrepreneurs to enter and be competitive in the local market.

**Technological Capability Matrix**

I make use of the two-dimensional technological capability matrix designed in the third chapter (Table 2) to describe all of the technological capabilities of the entrepreneurs in the local market. To start, I evaluate each of the entrepreneurs to determine the width of functions performed in the local market (investment, production, innovation, logistics operations, and linkages) and the level of capabilities accumulated with each function (basic, intermediate, and advanced). The evaluation is based on the data and observations collected on fieldwork. I create a two-dimensional technological capability matrix for each of the entrepreneurs in the local market. For example, Table 9 is the matrix for Waithĩra Mwangi.
Table 9: Matrix for Waithĩra Mwangi

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<tr>
<th>Levels of TC</th>
<th>Investment (Pre-Investment and Project Execution)</th>
<th>Production</th>
<th>Innovation</th>
<th>Logistics Operations</th>
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Then, I classify each of the entrepreneurs into one of three categories: tailors (machine operators, fundis, custom tailors, and ready-to-wear tailors), fashion designers (custom fashion designers, ready-to-wear fashion designers, and haute couture fashion designers), and stylists. The classification is based on a combination of self-identification of the interviewees and similar responses in the interviews. A brief description of each of the categories of entrepreneurs in the local market is provided in the fourth chapter.

I use the individual matrices to calculate the mean rank for each of the categories. Table 10 is an example of a mean rank calculation for the ready-to-wear fashion designers in production in pieces. Based on the individual matrices, Ria Ana Sejpal has accumulated a low-intermediate level of technological capabilities in production in pieces, Wandia Gichuru has accumulated a high-basic level, and Waithĩra Mwangi has accumulated a basic level (Ria Ana Sejpal, Interview, 21 April 2020; Wandia Gichuru, Interview, 24 February 2020; Waithĩra Mwangi, Interview, 20 February 2020). Therefore, the mean rank for the ready-to-wear fashion designers in production in pieces is high-basic. I calculate the mean rank for each of the categories in order to paint a more comprehensive picture of the construction of knowledge in the local market.
By calculating the mean rank for each of the categories, I spot the outliers in the data. For example, Ann McCreath is the Founder of KikoRomeo. She has achieved a high level of technological capabilities in almost all of the functions due to uncommon access to the local, regional, and global markets. Born in the UK, McCreath participates in fashion weeks in Barcelona, Madrid, Milan, and London. She sells her collections at high-end outlets in Nairobi, Lagos, London, and other cities around the world (Ann McCreath et. al., Group Interview, 26 February 2020). This is not the norm for the entrepreneurs in the local market – even the haute couture fashion designers – and therefore she is an outlier in the data.
Tailors

Table 11 is the technological capability matrix for all of the tailors: machine operators, fundis, custom tailors, and ready-to-wear tailors. The tailors accumulate an assortment of technological capabilities in the local market, from a basic level to an advanced level. For example, a custom tailor accumulates an intermediate level of knowledge and skills in innovation and an advanced level of technical knowledge and skills in production in pieces.

This is a contradiction to the literature that characterizes the tailors as lacking in technological capabilities (Apunda et. al., 2017; Kabecha, 1999), as well as the cliché in the local market that “those people who were tailoring in the past, most of them were school dropouts, most of them. And these were people who took themselves as failures, they cannot do anything” (Tobias Oswagoo, Peter Awino, Group Interview, 9 March 2020), or that the position of a tailor is “meant for the low-level people” (Osawa Otta, Interview, 26 March 2020). The tailors in the local market can do more than “handle a machine and do the stitching…stitch, stitch, stitch” or “reproduce a picture” (Maria Waithera, Interview, 3 March 2020; Geoffrey Karanja et. al., Group Interview, 17 March 2020; Apunda et. al., 2017). The entrepreneurs make moderate to extensive modifications to the processes and systems in the local market.
### Table 11: Tailors Technological Capability Matrix

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Table 11.1 is the technological capability matrix for the machine operators. The machine operators represent the outlier in the data set. The machine operators perform a low- to high-basic level of technological capabilities in all of the functions, minus the production in pieces. One reason for this is that the entrepreneurs do not have experience or exposure to accumulate the technological capabilities needed to enter and be competitive in the local market. The machine operators do not organize or oversee the production activities, or purchase the materials. Instead, the machine operators are accountable for cutting and sewing together individual pieces, putting together the material into the finished form. Thus, the entrepreneurs accumulate an advanced level of technological capabilities in the production in pieces. For example, a machine operator is able to sew together a t-shirt in 22 seconds and a polo-shirt in 25 seconds (Isaac Maluki, Interview, 16 March 2020). This is with all of the pieces cut out. That means a single machine operator is able to manufacture a little under 1,000 shirts each day (Mehul Shah, Alice, Group Interview, 18 March 2020).

It is important to note that the machine operator position is a starting point for those who seek to participate in the local market. The position provides opportunities to learn the basic level of technological capabilities in the local market, such as how to cut the cloth, how to operate a machine, and how to stitch. For example, Ria Ana Sejpal, Founder and Creative Director of Lilabare, entered the local market as a machine operator. She explains, “I wanted to learn and develop skills that are relevant. So, it was really my idea, you know, not just to learn how to design clothes, but really to understand like every aspect of the industry. Like, how factories work, how design houses work, how retail works” (Ria Ana Sejpal, Interview, 21 April 2020). The machine operators become well-versed with one or two machines over a period of time. This in turn allows the entrepreneurs to accumulate technological capabilities in production in pieces.
Table 11.1: Machine Operators Technological Capability Matrix

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Table 11.2 is the technological capability matrix for the fundis. The fundis rank above the machine operators, but below the custom tailors and ready-to-wear tailors. The fundis score an intermediate to advanced level of technological capabilities in production management, production in pieces, trouble-shooting, production development, and consumer relations. Despite the lack of technological capabilities in sourcing inputs, sourcing time, equipment, equipment management, and branding and marketing, the entrepreneurs produce pieces that meet the expectations and preferences of the local consumer, especially in regard to price. For example, the entrepreneurs set their prices below the market value. An average fundi asks for 20 to 50 KSH (circa .18 to .46 USD) to repair an outfit, 50 to 100 KSH (circa .46 to .91 USD) to re-size an outfit, and 100 to 200 KSH (circa .91 to 1.83 USD) to change the design of an outfit (Idris, Interview, 12 October 2019; Veronica, Interview, 2 October 2019). These rates attract and appeal to the local consumer.

Meanwhile, the fundis score the lowest levels of technological capabilities in sourcing inputs and sourcing time. This is because the entrepreneurs ask the local consumer to purchase the materials somewhere else, such as the second-hand clothing market, and bring it to them. The entrepreneurs do not travel to the market and purchase the materials themselves (Idris, Interview, 12 October 2019). This results in a lack of technological capabilities. In a similar manner, the fundis score a low level of technological capabilities in branding and marketing. The entrepreneurs do not advertise or promote themselves, such as on social media, but rather depend on word-of-mouth. This means that the entrepreneurs do not have the chance to accumulate technological capabilities in the promotion of a good or service.

Out of all of the entrepreneurs in the local market, the fundis encounter the most challenges to enhance and expand their technological capabilities in customer standards; to upgrade from the low-intermediate to an intermediate level. This is due to a cliché in the local market. A fundi is characterized as an unreliable entrepreneur – an entrepreneur who makes “mistakes,” such as careless stitches or incorrect sizes (Mercy, Interview, 18 March 2020). In addition, a fundi is looked down upon as a robber. One reason for the reputation is because the entrepreneurs work on the side of the
street. The entrepreneurs do not have a permanent location, and therefore must transport the equipment and materials back and forth. This results in a lack of trust. For example, Veronica used to be a fundi in Tudor, Mombasa. She explains, “when you are sitting outside, most of the people think you are there today, and tomorrow you are not there. They cannot, they do not have faith in you. They see that you can go at any time.” She adds that it is “more safe” to be a custom or ready-to-wear tailor than a fundi (Veronica, Interview, 11 October 2019). Although there is a thread of truth to each of these assertions, it is not applicable to all or even most fundis.
Table 11.2: Fundis Technological Capability Matrix

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<tr>
<th>Levels of TC</th>
<th>Investment (Pre-Investment and Project Execution)</th>
<th>Production</th>
<th>Innovation</th>
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Table 11.3 is the technological capability matrix for the custom tailors and ready-to-wear tailors. The custom and ready-to-wear tailors accumulate almost all the same levels of technological capabilities in investment and production: sourcing inputs, sourcing time, equipment, equipment production management, production quality control, production in pieces, and logistics. This is because the entrepreneurs accumulate the same technical knowledge and skills (e.g., how to operate a machine, how to stitch, and how to put together a piece without a pattern), and administrative and managerial knowledge and skills (e.g., how to obtain resources and how to achieve a target performance). For example, a custom tailor seeks out materials from the second-hand clothing market, purchasing either a bale of second-hand clothes or individual pieces, see Image 5 and Image 6. Likewise, a ready-to-wear tailor searches for the materials at the local and regional shops. Saide is a ready-to-wear tailor in Mombasa. He states, “Sometimes, I bring materials” from Nigeria, Uganda, and Tanzania (Saide, Interview, 19 October 2019). The entrepreneurs obtain the materials from the global textile and apparel value chain, and transform them to adhere to the local conditions.
Image 5: Bales in Mombasa
The same is true for the level of technological capabilities in linkages: consumer standards and consumer relations. The custom and ready-to-wear tailors accumulate an intermediate level of technological capabilities with little to no distinction. Their merchandise is of medium to high quality with straight stitches, durable seams, and smooth zippers. For example, Morrice Oduor is a ready-to-wear tailor at the fashion house: Frederick Bittiner. He explains that the most important part of the production process in order to meet “the consumer demand for quality” is the neatness of the stitches: “How neat the stitches. Yeah. Because, fabric, you can bring fabric in, so that is not our concern, but now our concern is the way we stitch” (Morrice Oduor, Marion Malika, Group Interview, 12 March 2020). While the ready-to-wear tailors sell their merchandise at a marginal higher price (e.g., 1,500 KSH (circa 13.70 USD) versus 2,000 KSH (circa 18.26 USD)), the contrast is not observed in the consumer standards.
and consumer relations. The price does not deter or determine the technological capabilities of the entrepreneurs to satisfy the expectations or preferences of the local consumer, or to create a positive and sustainable relationship with the local consumer.

The custom and ready-to-wear tailors accumulate almost identical levels of technological capabilities in innovation: product design and product development. The entrepreneurs accumulate a high-intermediate to low-advanced level of technological capabilities in product development. This is because the entrepreneurs draw upon their culture in similar but different terms to design collections tailored to the local consumer. For example, a custom tailor purchases a white dress shirt from the second-hand clothes market, and replaces the collar and cuffs with *kitenge* from the local market (Valentine, Interview, 30 October 2019). Or a ready-to-wear tailor combines a bunch of ideas from Pinterest to imagine a collection of cutting-edge dresses out of *kitenge*.

Elizabeth is a student at Delight Tailoring and Fashion Design School. She states, “If I want to get any design, I go to my Pinterest. Pinterest app. It brings for me any design” (Elizabeth, Interview, 21 February 2020). The entrepreneurs think outside the box to create custom ensembles with the local cloth, see Image 7. That said, the custom and ready-to-wear tailors accumulate a low-intermediate level of technological capabilities in product design. This is because the entrepreneurs make moderate adaptations to the designs, but provide minor new or original contributions.
The custom tailors score more points in product development than the ready-to-wear tailors. This is because the custom tailors produce merchandise that is made-to-measure, whereas the ready-to-wear tailors produce merchandise that is for the masses. The custom tailors are allowed to be more creative with the designs, such as removing and replacing the sleeves of a second-hand t-shirt with *kitenge*. The entrepreneurs do not need to consider the complications of the production process,
such as how to produce in bulk at lower costs. Meanwhile, the ready-to-wear tailors score more points in other technological capabilities, such as fulfilling orders, for the exact same reason. This is because the entrepreneurs produce enough stock to satisfy the local consumer demand without resulting in an overstock. The ready-to-wear tailors are able to receive, process, and deliver orders faster than the custom tailors.

The custom and ready-to-wear tailors do not match in the accumulation of capabilities in market research, project preparation, logistics and distribution, troubleshooting, logistics, and marketing and branding. The central reason is that the custom tailors sell the merchandise at home, at a stall or shop, or on the side of the street, whereas the ready-to-wear tailors sell the merchandise at a shop or store. For the most part, the custom tailors score better in troubleshooting and logistics. The entrepreneurs must consider the logistics of the operation, such as how to move the merchandise from home (production) to the side of the street (retail), or how to handle the harassment from the Department of Inspectorate. For example, a custom tailor rents a storage unit to cut down on transportation costs. The ready-to-wear tailors do not need to take into account the same considerations. In contrast, the ready-to-wear tailors score better in market research, project preparation, logistics and distribution, and branding and marketing. The entrepreneurs must think about the management of the storefront. For example, a ready-to-wear tailor packages the pieces in a branded box or conducts research on the best locations in the local market. The custom tailors do not have as much exposure or as many opportunities to accumulate these technological capabilities.

It is important to note that in order to rent a shop or store, the entrepreneurs must save or raise at least 10,000 KSH (circa 91.32 USD) to cover the first month of rent. This does not include other overhead costs (e.g., security deposit, internet service, and electricity). The price of rent is dependent on the location and size. This indicates that the ready-to-wear tailors have worked in the local market for a period of time and saved enough capital to advance, or entered the local market from an advantageous position with access to capital. The entrepreneurs in the former situation tend to accumulate a more advanced level of technological capabilities than the entrepreneurs in the latter situation. This shows the significance of previous experience in the process of
accumulation. I elaborate on the correlation between location and the level of technological capabilities in the seventh chapter.
### Table 11.3: Custom and Ready-to-Wear Technological Capability Matrix

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Fashion Designers

Table 12 is the technological capability matrix for the fashion designers: custom fashion designers, ready-to-wear fashion designers, and haute couture fashion designers. Similar to the tailors, the fashion designers demonstrate a diverse collection of technological capabilities, from a basic level to an advanced level.

Although there is a common consensus that the fashion designers accumulate an advanced level of technological capabilities in all of the functions (Rabine, 2002; Jennings, 2015), that consensus is not reflected in the local market. In the local market, a fashion designer is described as “a glorified tailor” (Eileen Nguthari, Interview, 19 March 2020), or a person who rides on the talent of tailors (Morrice Oduro, Marion Malika, Group Interview, 12 March 2020). In a similar manner, a stylist is portrayed as a part of “the support team” (Daisy Chesang, Interview, 5 March 2020). While there is a thread of truth in all of these statements, it is not the full truth and deceives the phenomenon at hand.

In the local market, the fashion designers do more than depend on the tailors, and the stylists do more than assist the fashion designers. The entrepreneurs accumulate the technological capabilities required to reorientate the resources available in order to meet the consumer demand. For example, a fashion designer is able to mix and match kitenge with other materials, and a stylist is able to adapt a design to better reflect the personal taste of the local consumer. In that sense, the entrepreneurs contribute to the construction of knowledge in the local market.
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Table 12.1 is the technological capability matrix for the haute couture fashion designers. The haute couture fashion designers stand out from the custom and ready-to-wear fashion designers, accumulating a basic level of technological capabilities in certain areas, and advanced in others. Their accumulation of technological capabilities is extreme on either side. This is because the entrepreneurs are not interested in the average consumer in the local market. The entrepreneurs take aim at niche markets and target audiences within those markets, such as those who are interested in luxury goods or sustainable products (Ann McCreath et. al., Group Interview, 26 February 2020). In addition, the haute couture fashion designers aspire to enter and be competitive in the global textile and apparel value chain. Therefore, the entrepreneurs design and create collections that appeal and adhere to the standards of the average consumer in the global market.

On one hand, the haute couture fashion designers achieve an advanced level of technological capabilities in sourcing inputs, production quality control, product design, branding and marketing, and consumer standards. All of the entrepreneurs build their brand in the local market (via photo shoots, social media platforms, and websites) with the plan to showcase their products in the international market, such as London Fashion Week and Paris Fashion Week (ibid.). Participation in a fashion week is the end goal. Therefore, the entrepreneurs invest their resources and time in the production of high-quality products, such as the importation of high-end intermediate materials. For example, Janet is the Co-Owner of a luxury leather bag boutique: Jokajok. She explains that the boutique imports leather from Ethiopia because that is the leather that is exported “to Italy to make the Louis Vuitton” (Janet et. al., Group Interview, 13 March 2020). The prices of the bags start from 10,000 KSH up to 40,000 KSH (circa 91.28 to 365 USD).

On the other hand, the haute couture fashion designers accumulate a basic level of technological capabilities in product development. The entrepreneurs prioritize the creation of a new product over the improvement of an existing one. In addition, the haute couture fashion designers accumulate a basic level of technological capabilities in sourcing time, equipment, equipment management, production in pieces, and product
development. The entrepreneurs lack the technical knowledge and skills, such as how to stitch or how to operate a machine. For example, Lucy Rao is the Owner of Rialto Fashions. She explains that most haute couture fashion designers “have very little technical knowledge on how to construct a garment” (Ann McCreath et. al., Group Interview, 26 February 2020). Thus, the entrepreneurs “hire somebody who can make your patterns and who can lay out your fabrics and who can get your product out there at the lowest possible fee. Because what most of us do is, for example, if they know I have a very, very good product and good tailors, then they sort of wait for my tailor to finish the work” (ibid.). The haute couture fashion designers depend on the tailors to construct the collection.
Table 12.1: Haute Couture Fashion Designers Technological Capability Matrix

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Table 12.2 is the technological capability matrix for the custom fashion designers and ready-to-wear fashion designers. The custom and ready-to-wear fashion designers accumulate identical levels of technological capabilities in investment, production, logistics operations, and linkages: market research, project preparation, sourcing inputs, sourcing time, equipment, production management, equipment management, production in pieces, logistics, troubleshooting, logistics and distribution, consumer standards, and consumer relations. This is because the entrepreneurs share similar goals and objectives in the local market.

The custom and ready-to-wear fashion designers accumulate a higher level of technological capabilities than the haute couture fashion designers in four areas: market research, sourcing time, production in pieces, and product development. Unlike the haute couture fashion designers, the custom and ready-to-wear fashion designers accumulate a high-intermediate level of technological capabilities in market research. This is because the entrepreneurs create collections for the consumer in the local market. The entrepreneurs tend to target a client base in the middle-to-upper income bracket, but captivate the attention of all consumers, especially for special events and holidays. To meet the expectations and preferences of the local consumer, the custom and ready-to-wear fashion designers invest more time and resources in market research than the haute couture fashion designers, such as spotting “emerging trends in terms of modern styles” (Waithïra Mwangi, Interview, 20 February 2020).

In a similar manner, the custom and ready-to-wear fashion designers accumulate a low-intermediate level of technological capabilities in sourcing time. The main reason for this is that the entrepreneurs source high-quality material from more immediate suppliers in the local and regional markets. For example, Irene is a ready-to-wear fashion designer at World Designs in Mombasa. She searches for brand names in the second-hand clothing market, and purchases *kitenge* in Tanzania and Uganda (Irene, Interview, 21 September 2019). Likewise, Ria Ana Sejpal is a ready-to-wear fashion designer, and the Founder and Director of Lilabare. She sources her materials from EPZs. She explains:
I was told by a colleague, she recommended that I go and find this jersey that you can get that is made in the EPZ. So, I ended up finding this one guy, Ian, and he has got a fantastic eye for fabrics, and he chooses really high-quality off-cuts from the EPZ. So, I buy directly from him. I get a lot of like jerseys or other stretch fabrics from him. (Ria Ana Sejpal, Interview, 21 April 2020).

Sejpal purchases the imported materials from EPZs and mixes them with materials from the local market, such as *kitenge* (ibid.). Even though the materials are not as high quality as the materials that the haute couture fashion designers source from the global market, the custom and ready-to-wear fashion designers accumulate a higher level of technological capabilities in sourcing time because of the origins of the materials.

The custom and ready-to-wear fashion designers score a little better in production in pieces than the haute couture fashion designers, achieving a high-basic level. This is because the entrepreneurs are more involved in the production process. That said, the entrepreneurs lack the technical know-how of the trade, such as how to stitch or how to operate a machine. For example, Waithĩra Mwangi is the Founder and Director of Ithira. She shares:

> I do not know anything about a stitch, but I have learned what stitches are. You see, now, I even know that there is a sewing machine and there is an overlock machine and embroidery machine, completely different. I did not know that. Yes, so when I started now inspecting, because the thing with clothes is you inspect from the inside out. It is not about the outside. It is about the inside. So, I will usually go, line-by-line, and just look at how neat the overlock has been done and the sewing has been done. (Waithĩra Mwangi, Interview, 20 February 2020).

Even though she is not as familiar with the technical knowledge and skills of the trade, Waithĩra oversees the production process, looking at the straightness of the stitches (ibid.). Likewise, Nyacomba ‘Jonas’ Githu is the Co-Founder of Free Minds. She explains that with her fashion line, “if it is a very complex design, there is a group of tailors that I work with in Kibera. And I like working with them because they are super
talented and some of them are self-taught” (Nyacomba ‘Jonas’ Githu, Interview, 10 March 2021). Githu produces an example of the product for the tailors to replicate. She relies on the tailors to put together the pieces because she has “not cracked” a lot of the patterns and it takes her “a bit more time” to sew compared to the tailors (ibid.).

Last but not least, the ready-to-wear fashion designers accumulate a high-basic level of technological capabilities in product development, and the custom fashion designers accumulate a low-intermediate level. Similar to the haute couture fashion designers, the custom and ready-to-wear fashion designers put more emphasis on new designs and product ideas. The entrepreneurs express a desire to participate in international fashion weeks around the world. However, unlike the haute couture fashion designers, the custom and ready-to-wear fashion designers invest time and resources to improve existing designs too, especially designs that combine the African fabrics with Paris couture. This is because their target audience extends past the niche markets and includes the average consumer in the local market.

The custom fashion designers rank above the ready-to-wear fashion designers in three areas: production quality control, product design, and product development. The custom fashion designers manufacture made-to-order merchandise for the local consumer; whereas the ready-to-wear fashion mass-produce merchandise for the local consumer. Since the custom fashion designers produce for the individual rather than the collective, the entrepreneurs are able to make sure that the quality of the merchandise is in line with their brand. For example, Linda Murithi is the Founder and CEO of The Core Fashion Kenya. She explains how important it is to look at each stitch prior to the final sale. She notes, “The quality of what you put out there, remember, represents you” (Linda Murithi, Interview, 27 February 2020). In a similar manner, the custom fashion designers are able to be more creative in product design and product development. The entrepreneurs do not need to consider the arrangements around mass-production, but rather how to stand out as a name. The entrepreneurs experiment with the resources available in the local and regional markets.

Meanwhile, the ready-to-wear fashion designers rank above the custom fashion in two areas: fulfilling orders, and branding and marketing. The entrepreneurs consider the
costs of meeting the consumer demand without running out of stock or carrying excess supply. For example, VIVO sells the out-of-season merchandise online at a discounted price. Steven, Finance Officer at VIVO, explains that “Our stores are not very big. So, we need to just make sure that we get maximum value for each space. We do not want to have half of the stores sitting on sale items when we can have full priced items in the stores” (Steven, Interview, 24 February 2020). In a similar manner, the entrepreneurs define and redefine their marketing and branding strategies, keeping in mind the environment of the local market.
Table 12.2: Custom and Ready-to-Wear Fashion Designers Technological Capability Matrix

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Stylists

Table 13 is the technological capability matrix for the stylists. This categorization is similar to the haute couture fashion designers in that all of the levels of technological capabilities land on one or the other side of the spectrum. The entrepreneurs accumulate a basic level of technological capabilities in sourcing time, equipment, equipment management, production in pieces, production design, but an advanced level of technological capabilities in production quality control and branding and marketing.

The stylists accumulate a basic level of technological capabilities in the production in pieces, equipment, and equipment management because of their role in the local market: to “sell a style” (Waithēra Mwangi, Interview, 20 February 2020). A stylist is characterized as “the commercial eye of the designer” (Connie Aluoch, Interview, 7 October 2020). The entrepreneurs are not concerned with or involved in the actual construction of the garments, such as pattern drafting or sewing together the parts (ibid.). The entrepreneurs do not work on the sewing machine, except to add accessories or to hem an outfit. Instead, the entrepreneurs aim to commercialize and sell the products of their clients.

For that reason, the stylists prioritize the accumulation of technological capabilities in production quality control and branding and marketing. The entrepreneurs work with all types of clients in the local market, from celebrities to fashion designers (Mercy, Interview, 18 March 2020); and, therefore, bank on positive reviews to boost their reputation in order to attract and retain clients. That pushes the entrepreneurs to use their technological capabilities to organize photo shoots and runways, post on social media, publish fashion editorials, record a podcast, and update the website. For example, Connie Aluoch is the Founder of Connie Aluoch Styling Management. She organizes weekly live episodes on Instagram and YouTube (Connie Aluoch, Interview, 7 October 2020). The entrepreneurs think outside the box to create style guides for their clients.
Table 13: Stylists Technological Capability Matrix

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All of the Entrepreneurs in the Local Market

Table 14 is the technological capability matrix for all of the entrepreneurs in the local market. After evaluating the width of functions and level of capabilities for each of the categories of entrepreneurs (e.g., tailors, fashion designers, and stylists), I compile the three matrices into a single matrix to paint a picture of the construction of knowledge in the local market. The matrix is a practical tool to examine the extent to which the entrepreneurs take advantage of the opportunities in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market (Whitfield, Staritz, 2017b; Yuri, Mai, 2009).

It is important to bear in mind that the level of technological capabilities is indicative. Each of the entrepreneurs in the local market wear more than one hat and accumulate an assortment of technological capabilities. Each role is convoluted. For example, Akinyi Odongo, Executive Board Chair at the KFCO and Head Fashion Designer at MEFA Creations, describes her career path:

I stitched at night, stitched during the day. I was the tailor, the designer, the accountant, the messenger, everything. So, I stitched at night and during the day I did the deliveries. (Ann McCreath et. al., Group Interview, 26 February 2020).

Odongo is more than a tailor or a fashion designer. She took on a number of roles in order to enter and be competitive in the local market. In a similar manner, Mary, Instructor at Delight Tailoring and Fashion Design School, and Owner of Sasha Designs Closet, explains, “Mostly, I am a tailor because I do a lot of stitching. Yes. But I do teach design” (Mary, Interview, 11 March 2020). She is a tailor and a fashion designer. This turn of phrase came up a lot in the interviews. The entrepreneurs in the local market acknowledged that “A lot of the stylists are turning into designers” (Glena Jiwani, Interview, 18 March 2020), or “people seem to double up” (Connie Aluoch, Interview, 7 October 2020).

Not one entrepreneur is the same and nor is their process of accumulation of technological capabilities. I categorize the data based on how the interviewees defined
and perceived themselves. The purpose of the matrix is to paint an overall picture of the entrepreneurs in the local market. Drawing on first-hand accounts and observations, I present a more comprehensive and complex picture of the construction of knowledge in the local market. This picture shows the extent to which the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process.

*Investment*

With the exception of the machine operators and fundis, all of the entrepreneurs in the local market accumulate an intermediate to high-intermediate level of technological capabilities in market research and project management. The entrepreneurs collect information about the local consumer and create products that reflect that information. In addition, the custom and ready-to-wear tailors conduct research on the locations available in the local market, such as a stall in the marketplace or a store in the mall (Waithĩra Mwangi, Interview, 20 February 2020; Veronica, Interview, 2 October 2019). The same is true for the stylists. The stylists collect information about the needs and wants of the local consumer in order to remain relevant in the local market. For example, Connie Aluoch is the Founder of Connie Aluoch Styling Management. She explains that she switched from luxury brands to sustainable brands because “luxury is not a priority right now in Kenya” with about “1 percent who are buying luxury” (Connie Aluoch, Interview, 7 October 2020). The machine operators and fundis accumulate a lower level of technological capabilities in these areas because their location is allocated or pre-determined, such as at an EPZ enterprise. The entrepreneurs do not have the chance to accumulate these technological capabilities (Idris, Interview, 12 October 2019).

In addition, almost all of the entrepreneurs accumulate an intermediate to high-intermediate level of technological capabilities in sourcing inputs. The entrepreneurs take advantage of the resources available from the global textile and apparel value chain, especially the second-hand clothing market, to produce and reproduce products that respond to the local consumer demand. For example, Valentine is a custom tailor at the Cathedral Fashion and Design School at the Holy Ghost Cathedral. She purchases
white shirts and pants at Kongowea and kitenge at Marikiti. Then, she “decorates” the white ensemble with “patches” of kitenge (Valentine, Interview, 30 October 2019). The entrepreneurs build on the diversity of the second-hand clothing market, searching for alternative solutions and selecting the most suitable ones that meet the needs of the local consumer. The entrepreneurs do not see the second-hand clothing market as competition per se, but rather as an opportunity to produce or reproduce something “new” in a different cultural and socio-economic context. The second-hand clothing market provides opportunities for the entrepreneurs to enhance and expand their technological capabilities.

The machine operators and fundis accumulate a low-basic to basic level of technological capabilities in sourcing inputs. The entrepreneurs do not source materials. Instead, the machine operators receive the materials from their employers, and the fundis ask their clients to purchase the materials elsewhere, such as from an apparel enterprise or the second-hand clothing market, and bring it to them. Meanwhile, the haute couture fashion designers accumulate an advanced level of technological capabilities in sourcing inputs. The entrepreneurs have the financial means to source their desired inputs, such as 100 percent cotton from the international market.

All of the entrepreneurs accumulate a low-basic to low-intermediate level of technological capabilities in sourcing time. This is because the entrepreneurs have to source the materials from the regional or international markets, or search for the materials at the second-hand clothing market, rather than from the local market. This increases the lead time in all areas of operation. For example, Fatuma is the Head of the Textile Department at the Bombolulu Coast Workshop and Cultural Center. She drives to Tanzania three times a year “to get plain pure cotton” (Fatuma, Interview, 14 October 2019). She explains that it is impossible to get “100 percent cotton” in Kenya. In addition, the cotton in Tanzania is “very cheap” in comparison (ibid.). Likewise, Elizabeth is a tailor in Mombasa. She comments that she will spend hours in the second-hand clothing market in search of suitable materials (Elizabeth, Interview, 31 October 2019). Janet is the Co-Owner of the luxury leather bag boutique: Jokajok. She shares that the investment in the time discovering the diamond in the rough at the
second-hand clothing market is inconvenient. She characterizes the second-hand clothing market as “chaotic” (Janet et. al., Group Interview, 13 March 2020).

A small proportion of the custom and ready-to-wear fashion designers source the excess materials from the EPZs. For example, Wandia Gichuru is the Co-Founder and CEO of VIVO. She sources the woven materials from a small EPZ “because they have the benefit of bringing in fabric duty free” (Wandia Gichuru, Interview, 24 February 2020). In addition, she purchases “stuff from an EPZ that is made for a European or an American brand. [It is] still made-in-Kenya. It is great. It is better than nothing. It is made in Kenya” (ibid.). Even though the GOK requires the EPZs to pay the 25 percent import tax to offload 20 percent of their annual production, the word on the street from the entrepreneurs is that the EPZs evade the import tax. For example, a textile and apparel manufacturer explains that:

The EPZs, they import all the fabric, and they throw the fabric in the market as well. Yeah. They get duty free. The fabric duty is 25 percent. So, say I am an EPZ guy here, I bought a container load. I can sell 50 percent of my goods in the local market. So, without even having a markup, if I just take into consideration 25 percent duty, I won 25 percent. (Name Withheld).

The manufacturer continues, “Yeah, but are they paying the right duties? They are not. Yeah. They are not. Me, being in the textile, I know they are not. Yes, they are paying, maybe. But instead of paying for 2 dollars, they might be paying for 50 cents. So, you know, it is a big mess up here” (ibid.). The manufacturer shares that the EPZs set up shops in the local market to sell the excess materials to the entrepreneurs. On one hand, the entrepreneurs decrease their lead time via sourcing the materials at market value from a local EPZ. On the other hand, the entrepreneurs increase their lead time via establishing and sustaining a relationship with a local EPZ. Thus, all of the custom and ready-to-wear fashion designers accumulate a low-basic to low-intermediate level of technological capabilities in sourcing time due to the lack of access to textiles and apparel in the local market.
In a similar manner, all of the entrepreneurs accumulate a lower level of technological capabilities in equipment. It is expensive and time-consuming to purchase new equipment. A new sewing machine costs around 80,000 KSH (circa 690.55 USD) (Mercy, Interview, 18 March 2020). Therefore, the entrepreneurs purchase second-hand sewing machines from other entrepreneurs in the local market, or EPZs. For example, Rosemary has been a tailor in Tudor since 1989. She has purchased two machines since then: a manual and an electric. Both of the machines came from EPZs (Rosemary, Interview, 19 October 2019). A second-hand sewing machine costs between 25,000 to 45,000 KSH (circa 215.80 to 388.43 USD), depending on the condition (Maria Waithera, Interview, 3 March 2020).

It is important to point out that it is almost impossible for the entrepreneurs to achieve an advanced level of technological capabilities in sourcing inputs, sourcing time, and equipment, with the exception of haute couture fashion designers. This is because the entrepreneurs cannot source the materials from the local textile manufacturers. The local textile mills produce 25,000 bales of cotton (5,3000 tonnes) per annum compared to 174,533 bales (38,000 tonnes) required for apparel production in the local market (USITC, 2009). The local textile mills do not produce enough materials to meet the needs of the entrepreneurs in the local market. At the same time, the entrepreneurs cannot bear the cost of importing materials from the regional and international market. The GOK imposes a 20 to 25 percent import tax on intermediate materials in order to protect the development of the local textile manufacturers; however, that protection comes at a cost to the production of apparel. Even the larger enterprises with more than 250 employees struggle to find the sufficient funds to import the resources required for production (Wandia Gichuru, Interview, 24 February 2020). Thus, all of the entrepreneurs take advantage of the resources available from the global textile and apparel value chain in order to enter and be competitive in the local market.

Production

For the most part, all of the entrepreneurs in the local market accumulate a low-intermediate to advanced level of technological capabilities in production management, logistics, production quality control, and trouble-shooting. This is because the
entrepreneurs have the technological capabilities to think through complex problems and seek out opportunities in order to achieve the targeted performance. In other words, the entrepreneurs “phase out all potential problems” in order to “ensure a smooth operation or usage” (Tsekouras, 2006, p. 128). The fashion designers and stylists accumulate more technological capabilities in production quality control than the tailors. One explanation is that these entrepreneurs seek to enter the global market. The entrepreneurs spend more time and resources to ensure that their products meet the exportation requirements, such as the hem length of a skirt, or health and safety requirements.

The tailors accumulate an advanced level of technological capabilities in production in pieces, whereas the fashion designers and stylists accumulate a basic to high-basic level. The tailors participate in each step of the production process, including the construction step. The tailors accumulate the technological capabilities to draft patterns, cut material, and sew together those pieces. Meanwhile, the fashion designers and stylists oversee each stage in the production system. The entrepreneurs usually do not put together the outfit.

All of the entrepreneurs accumulate a basic level of technological capabilities in equipment management, except the custom and ready-to-wear tailors. The custom and ready-to-wear tailors accumulate at an intermediate level. This is because the custom and ready-to-wear tailors are more involved in the actual production process than the fashion designers and stylists. The entrepreneurs accumulate the technological capabilities to operate on and maintain the sewing machines in order to achieve the target performance. The custom and ready-to-wear tailors own at least two sewing machines, and know how to use both manual and electric sewing machines.

Innovation

Innovation, in a general sense, involves “the recognition of a need or…a potential market for a new product or process” and “technical knowledge” (Kabecha, 1999, p. 118). In contrast to the literature, such as that of the OECD, which reports that “few African enterprises are innovative” because “less than one-fifth of African early-stage entrepreneurs offer new products or services to the market” (OECD, 2018, p. 173), or
Sarah Kyejjusa and Henny Romijn, who state that African entrepreneurs are “less-privileged and have more limited resources and edification…leading to limited innovation” (Kyejjusa, Romijn 2017, p. 2), I contend that all of the entrepreneurs in the local market perform more than a basic level of technological capabilities in innovation. The entrepreneurs take advantage of the resources available to introduce transformative designs.

The tailors and stylists score better in product development than product design, whereas the opposite is true for the fashion designers. The tailors and stylists accumulate an intermediate to low-advanced level of technological capabilities in product development, making moderate adjustments or alterations to the merchandise in order to meet the expectations and preferences of the local consumer. For example, a custom tailor replaces the front pocket and sleeves of a collared shirt with *kitenge*. In doing so, the entrepreneur represents the cultural values of the community. The entrepreneurs do not dictate new styles, but rather “endeavor to design clothes that will meet consumer demand” (Steele, Major, 2019). The entrepreneurs are more interested in improving an existing product and less interested in creating a new product.

That does not mean that the tailors and stylists do not introduce new ideas or improvements. The entrepreneurs produce all kinds of administrative, managerial, and technical changes, such as the development of new products and the incorporation of new sewing techniques. The entrepreneurs are able to adapt products based on the available tools. While product changes are more prevalent than equipment changes, the entrepreneurs demonstrate more than a basic level of technological capabilities in product design.

The fashion designers, on the other hand, accumulate a high-intermediate to advanced level of technological capabilities in product design, making major adjustments or alterations to the merchandise. These adjustments or alterations are “clearly distinguished…due to the degree of novelty and significance,” such as the production of luxury goods or sustainable pieces (Tsekouras, 2006, p. 128). The entrepreneurs invest their time to think outside the box and imagine something new. The entrepreneurs
appeal to a specific audience, such as those in a niche market or the international arena, rather than the general population.

Logistics Operations

For the most part, all of the entrepreneurs in the local market accumulate the same level of technological capabilities in logistics operations: logistics and distribution, and fulfilling orders. The fashion designers and stylists score a little better in logistics and distribution than the tailors because of the services provided. The entrepreneurs invest their time and resources in custom packaging, and pay for personal delivery. For example, Nzisa Liku is the Owner of Vika Apparel. She offers overnight delivery for printed t-shirts via boda-boda, Bolt, or Uber (Nzisa Liku, Interview, 5 March 2020). Boda-bodas are motorcycle taxis; Bolt and Uber are app-based ride-hailing services. Meanwhile, the tailors put the product in a non-descript cloth bag and arrange for a pick-up place. The tailors do not need to prioritize technological capabilities in logistics and distribution because most of their clients come to them. Most of the tailors do not sell online.

Linkages

With the exception of the machine operators, all of the entrepreneurs in the local market accumulate at least an intermediate level of technological capabilities in consumer standards and consumer relations. This is because the entrepreneurs oversee the production process from start to finish, from the procurement of the materials to the final sale of the end product. Everything is done in-house. The production process is internal and allows the entrepreneurs to communicate and connect with the local consumer at each step. The entrepreneurs understand the consumer behavior in each area of the local market, such as the importance of price and quality.²

² Consumer behavior is a “set of activities which the consumers directly perform to acquire, use, and dispose products and services” (Aghdaie, Honari, 2014, p. 260). Consumer behavior is influenced via age, cultural background, economic conditions, personal preferences, political views, religion, and social circles. These components interact and change over time to influence the present state of the consumer (Jean-Baptiste, 2020). Philip Kolter and Gary Armstrong group the components that influence consumer behavior into four categories: cultural, personal, psychological, and social (Kotler, Armstrong, 2008).
The custom and ready-to-wear tailors accumulate an advanced level of technological capabilities in consumer relations. The tailors receive more repeat orders than the fashion designers, appealing to the price-conscious consumers. For example, Veronica is the Owner of White Rose Fashion. She charges 2,500 KSH (circa 22.98 USD) for a custom-made dress, see Image 8 (Veronica, Interview, 2 October 2019). Likewise, Rose is the Head of the Clothing and Fashion Section at KCNP. She charges 1,500 to 2,000 KSH (circa 12.95 to 17.26 USD) for a custom-made dress. Meanwhile, Ria Ana Sejpal is the Founder and Director of Lilabare. She charges 25,568 KSH (circa 235 USD) for a ready-to-wear dress. She explains that the price reflects the clean stitches, sustainable materials, and targeted clientele (Ria Ana Sejpal, Interview, 21 April 2020).

Image 8: Veronica, Tailor in Mombasa
Almost all of the entrepreneurs accumulate a distinct level of technological capabilities in branding and marketing, with the fashion designers and stylists achieving a high-intermediate to high-advanced level. The fashion designers and stylists invest in brand creation, photo shoots, and social media in order to attract and retain customers. For example, Wandia Gichuru is the Co-Founder and CEO of VIVO. In the VIVO warehouse, there is a “studio for taking pictures to post on social media” (Wandia Gichuru, Interview, 24 February 2020; Steven, Interview, 24 February 2020). Gichuru hires models to pose and promote the fashion line. One reason the entrepreneurs prioritize branding and marketing is because their prices are higher than the other entrepreneurs in the local market. The entrepreneurs need to build a brand in order to survive in the local market.

The tailors, on the other hand, depend on word-of-mouth. The entrepreneurs accumulate a small customer base and build up the business enough to be competitive in the local market. The entrepreneurs ask their customers to “promote them” and their products, advertising the low prices and high quality (Idris, Interview, 12 October 2019; Sister Faustina, Interview, 25 September 2019). In addition, a percentage of the custom and ready-to-wear tailors operate in niche subsectors, specifically school bags and uniforms, military and security boots, and construction vests with yellow safety reflectors (EPZA, 2005). The entrepreneurs build a regular customer base with governmental departments and schools, and therefore do not need to invest in branding and marketing. For instance, Koome Arnold is the Operations and Business Development Executive at Riera-Tex Ltd, Kirinyaga Road – a company that manufactures uniforms, safety equipment, screen printing, security accessories, and promotional wear. He explains that “80 percent of the customers are repeat customers” (Koome Arnold, Interview, 11 March 2020). He continues that the customers came from referrals.

It is important to consider that the conventional technological capability matrix is under the assumption that “local firms generally score lower on linkage capabilities than the other categories of capabilities, because all firms score low on links with public sector institutions” (Whitfield, Staritz, 2018, p. 27), and “local firms struggle to…create the end-market and linkages capabilities required for exporting” (Whitfield et. al., 2020, p. 206).
The argument is that the entrepreneurs in the local market are unable to establish relationships with “other firms, industry experts, and public or private sector institutions” and “foreign investors, global buyers, and input suppliers,” which are essential to improve their performance levels (ibid., pp. 199, 201). This is because the conventional technological capability matrix adheres to the standards in the global textile and apparel value chain. Since I created a matrix that adheres to the standards of the local market, I refer to the technological capabilities in linkages as the ability to establish relationships with the local consumer: branding and marketing, consumer standards, and consumer relationships. The entrepreneurs in the local market produce for the local market rather than the global textile and apparel value chain, and thus acquire the knowledge to appease the expectations and preferences of the local consumer, such as the neatness of stitches. The entrepreneurs are able to establish relationships with the local consumer. Moreover, since the entrepreneurs wear more than one hat in the local market, participating in all stages of the production system, there is less of a need to establish relationships with other entrepreneurs in the global textile and apparel value chain. Everything is done in-house. The entrepreneurs do not need to outsource. This is a significant contribution to the literature that at the moment depreciates or devalues their technological capabilities in linkages. The matrix that adheres to the standards of the local market shows that the entrepreneurs do not have to establish “international linkages” in order to improve their performance (Whitfield, Staritz, 2018, p. 2).
### Table 14: Entrepreneurs Technological Capability Matrix

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Conclusion

The purpose of the chapter was to make use of the technological capability matrix to assess all of the levels of technological capabilities of the entrepreneurs in the local market. Unlike the assertion in the literature on the capabilities of the entrepreneurs in the textile and apparel sector (Apunda et. al., 2017; Prag, 2013; Kabecha, 1999), I contend that all of the entrepreneurs in the local market accumulate more than the basic level of technological capabilities. This is because the matrix adheres to the standards of the local market rather than the global textile and apparel value chain. In the conventional technological capability matrix, which adheres to the standards of the global textile and apparel value chain, the entrepreneurs in the local market would not have scored the same level of technological capabilities. For example, a ready-to-wear tailor would have ranked lower in market research and project preparation. This is because the tailor does not collect information on the expectations or preferences of the global consumer; the tailor is interested in the local consumer. Meanwhile, an haute couture fashion designer would have ranked higher in market research and project preparation. This is because the fashion designer is more interested in international trends than the local taste. The matrix is a crucial contribution to the literature because it is able to paint a more comprehensive picture of the technological capabilities of the entrepreneurs in the local market. The matrix is able to capture the process of accumulation of technological capabilities at the microeconomic level, which contributes to a better understanding of the construction of knowledge in the local market.

Without doubt, heterogeneity among the entrepreneurs exists. As explained in the previous chapter, I adopted the TC approach to categorize the entrepreneurs based on their functions, such as the ability to secure resources or fulfill orders. However, the categories do not recognize variation among the entrepreneurs in the same group. This is because the entrepreneurs in the local market wear more than one hat. For example, a tailor is able to be a street vendor, and a fashion designer is able to be an importer. The entrepreneurs who wear more than one hat are able to perform more functions and, more often than not, achieve a higher level of technological capabilities.
The tailors represent the group with the strongest heterogeneity. Most of the tailors take on additional roles and responsibilities in the local market. For example, Rita Mueke is a tailor and a second-hand clothing retailer at Kiembeni Estate. She “remove[s] the best-best pieces” from the bales and “put[s] them aside” for herself (Rita Mueke, Interview, 1 October 2019). She selects the material that she needs to put together an ensemble. As a second-hand clothing retailer, Rita is able to accumulate a higher level of technological capabilities in sourcing inputs than the average tailor. In a similar manner, Sister Faustina is a sister at St. Joseph Church and a tailor at Star of the Sea. She obtains most of her orders from St. Joseph Church. During the high season, she receives so many orders that she has to tell other customers, “I do not have time. For the church, it needs concentration” (Sister Faustina, Interview, 25 September 2019). As a sister at St. Joseph Church, Sister Faustina is able to accumulate a higher level of technological capabilities in linkages than the average tailor. By taking on additional roles and responsibilities in the local market, the tailors perform a wide range of functions that allow them to enhance their knowledge and expand their skill set.

Meanwhile, the fashion designers and stylists do not show as much variation in their level of technological capabilities. Most of the fashion designers and stylists do not engage in other employment. That does not mean that such variation does not exist (Janet et. al., Group Interview, 13 March 2020), but rather that most fashion designers and stylists perform similar functions.

Despite the heterogeneity among the tailors, and the lack of heterogeneity among the fashion designers and stylists, common ground exists. All of the entrepreneurs accumulate the technological capabilities needed to enter and be competitive in the local market. All of the entrepreneurs accumulate at least an intermediate level of technological capabilities in production management, trouble-shooting, logistics and distribution, fulfilling orders, consumer standards, and consumer relations. This is in contrast to the existing literature that criticizes the entrepreneurs in the local market for the lack of technological capabilities (Apunda et. al., 2017; Kabecha, 1999). Moreover, the entrepreneurs pursue opportunities to expand and enhance their technological capabilities. This will be further discussed in the next chapter.
It is important to note that the process of accumulation of technological capabilities is continuous. The acquisition of capabilities, even a basic level of capabilities, calls for time. It requires a “considerable expenditure of effort” (Biggs et. al., 1995, p. 6). Even though the research project is rooted in a specific moment in time, the matrix is able to show the extent to which the process of accumulation of technological capabilities is influenced (via education, location, and resources) over a period of time. The matrix is more than a simple sum of the technological capabilities of the entrepreneurs in the local market; the matrix represents all of the learning that the entrepreneurs have acquired and the ways in which that learning has been absorbed and adapted in the local market (Cimoli, 2000, pp. 3-16). I am looking at the local market over a period of time and capturing the process of accumulation of technological capabilities in a snapshot.
Chapter 6: Learning and Technological Capabilities

Introduction

The aim of the chapter is to assess all of the activities that the entrepreneurs in the local market participate in as a means to accumulate technological capabilities in order to enter and be competitive in the local market. The baseline level of technological capabilities is sufficient to enter the local market, but it is not enough to remain competitive. The entrepreneurs need to continue to accumulate technological capabilities in order to avoid moving down from a higher level to a lower level (Yuri, Mai, 2009, p. 18). The entrepreneurs optimize the learning opportunities in the local market to achieve a higher level of technological capabilities (Choung et. al., 2006).

For the purpose of the research project, learning is understood as a process that leads to a change in knowledge or skill set. It is a result of an experience. Learning is not "an inevitable by-product of some other activity; it may have to be undertaken as an activity in its own right" (Bell, Pavitt, 1992, p. 263). It is something that the entrepreneurs do themselves, rather than something done to them. There is not a single avenue to learning, but rather “various forms of ‘doing’ … to the learning processes” (ibid., p. 272).

At the heart of the research project is that learning is an avenue through which an entrepreneur is able to accumulate technological capabilities. To assess all of the avenues, I apply the technological capability matrix that I customized to the local market.

In the matrix, I look at all of the ways in which learning takes place, including formal and informal learning activities. The chapter does not dismiss the value of informal learning activities. This is important as the accumulation of technological capabilities takes place in both conventional and unconventional spaces, inside and outside the classroom, such as through an apprenticeship or self-directed practice. Thus, I am able to show that the tailors lean towards informal learning activities to accumulate the technological capabilities needed to enter the local market; whereas the fashion designers and stylists lean towards formal learning activities. The tailors seek out opportunities to practice their practical skills, such as pattern drafting and garment construction. Informal learning provides hands-on, practical experiences. In contrast, the fashion designers and stylists
seek out opportunities to advance their theoretical knowledge, such as business procedures and marketing strategies. Formal learning is theoretical in nature.

I explain the extent to which the entrepreneurs enhance and expand their technological capabilities in order to be competitive in the local market. The entrepreneurs seek out a combination of formal and informal learning activities in order to accumulate a sustainable level of technological capabilities. For example, a tailor attends a training program at a polytechnic for the purpose of a certificate; whereas a fashion designer signs up for an apprenticeship program at an EPZ enterprise to practice on a sewing machine. The different learning activities result in different learning outcomes. These outcomes translate to economic performance over time.

The matrix is a useful tool to assess all of the activities that the entrepreneurs undertake in order to learn (Cimoli, 2000, pp. 3-16). This is significant as most of the learning activities that adhere to the standards of the local market take place outside of the confines of the classroom wall. The matrix paints a picture that represents the realities of the local market.

Critical Engagement with the Literature on Learning Avenues in the Textile and Apparel Sector

The literature on the learning avenues in the textile and apparel sector is immense with special attention to formal and informal learning. Formal learning is learning that takes place in a structured program of instruction and is recognized by the attainment of an award or qualification, such as a certificate, diploma, or degree. Informal learning is learning that takes place “alongside mainstream systems of education and training,” such as at home or in the workplace (Apunda, 2017, p. 343). Informal learning does not mean disorganized or undesigned, but rather self-directed. For the most part, the relevant literature is interested in the contributions and limitations of formal and informal learning, from the access to formal learning activities to the attributes of informal learning activities (Wamalwa et. al., 2020; Oluoch, 2019; Apunda et. al., 2017; Whitfield, Staritz, 2017b; Otieno, 2013; Bloom et. al., 2006; Jones et. al., 2005). For the purpose of the research project, I review the recent contributions to the literature in respect to the
avenues that the entrepreneurs in developing countries assume in order to accumulate technological capabilities.

It is important to note that the formal and informal debate has attracted the attention of scholars who represent a range of academic disciplines and approach the research from a variety of perspectives. The debate pits these “two different systems…against each other” (Chakrabarti, 2014, p. 155), opening up real potential for misinterpretations, such as equating the term “formal” with “modern,” “regulated,” or “skilled,” and the term “informal” with “traditional,” “unregulated,” or “unskilled” (Hodder, 2016, p. 113; Chaddha et. al., 2009, p. 7). I do not agree with these interpretations. In the thesis, I acknowledge the importance of the formal and informal debate, especially in the textile and apparel sector, but do not engage. There is no scarcity of literature on the subject (Deléchat, Medina, 2020; Hodder, 2016; Ogunsade, Obembe, 2016; Hasan, Raza, 2015; Chakrabarti, 2014; Chaddha et. al., 2009; Ascoly, 2004; Palmer, 2004; Trulsson, 1997, King, 1996). While I understand that the debate is far from black and white, and under no circumstance should it be considered so, I think that the dichotomy is a useful tool to categorize. Therefore, I treat the terms “formal” and “informal” as overarching themes in order to assess all of the learning activities in the local market. I use these terms in a conceptual manner.

Most of the literature that reviews the role of higher education in Africa is rooted in the idea that formal learning is an instrument in economic growth and industrial development (Oluoch, 2019; Otieno, 2013; Bloom et. al., 2006; Jones et. al., 2005). The idea is that formal learning is able to provide the entrepreneurs with the technological capabilities needed to succeed in the textile and apparel sector. For example, Glen Jones et. al., evaluate the extent to which higher education contributes to economic growth and entrepreneurialism. The authors assert that higher education is the “keeper and creator of knowledge that prepares new generations with the skills [in research and design, and innovative capabilities] …to make their own contributions to society” (Jones et. al., 2005, p. ix). These technological capabilities allow the entrepreneurs to participate in and respond to the rapidly changing global economy, especially in developing countries (ibid., p. 174). David Bloom et. al., concur that higher education is
a “necessary contribution to the success of national efforts to boost competitiveness, economic growth, and productivity,” especially in East African countries (Bloom et. al., 2006, p. i). For example, the scholars predict that the current production level in East African countries is about 23 percent below the possible threshold. Their assessment indicates an increase in higher education would result in a 12.2 percent boost to income growth in the first year. This is because higher education is a “complement to education efforts at other levels as well as national initiatives to boost innovation and performance across economic sectors” (ibid., p. iii). Bloom et. al., conclude that higher education is a critical component to enhance economic development through technological catch-up (ibid., p. 30).

Daniel Otieno considers the contributions of universities to the achievement of the Kenya Vision 2030. He notes that “higher education is understood as being necessary to the success of national efforts to boost productivity, competitiveness, and economic growth” (Otieno, 2013, p. 19156). The reason is that universities “contribute towards fostering-life-long learning by engaging adults in the process of acquiring knowledge and skills that are relevant to society” (ibid., p. 19158). In addition, universities “play an innovative role in tackling the problems of underdevelopment,” such as promoting technological innovation to reinvigorate regional economies (ibid.). Universities produce “an educated and well-trained labor force” rather than “half-baked graduates” that are not prepared to meet the challenges of the local and global markets (ibid., pp. 19156, 19157). On that account, Otieno asserts that Kenya and other African states need to “invest in training of qualified manpower to drive the wheels of development” (ibid., p. 19156).

In a similar manner, George Oluoch observes the technical and vocational education and training (TVET) institutions and their role in the revitalization of the textile and apparel sector in Kenya. He explains that “TVET institutions are expected to play a vital role in the production of skilled labor to facilitate the revitalization of the textile industry in Kenya” (Oluoch, 2019, p. 77). This is because the aim of the institutions is to “bring up application-oriented talents that have related technical and theoretical knowledge and practical ability” (ibid., p. 79). However, the TVET institutions fall short on that
expectation because the institutions do not offer textile related courses, such as ginning engineering, textile engineering, and textile design and technology courses. This is in spite of the fact that the GOK identifies the textile and apparel sector as a critical component in “anchoring the country’s deeper movement into middle income status and in serving as a source of gainful employment for its fast growing, young population” (World Bank Group, 2015, p. ii). Oluoch concludes that there is a need for a “regular review of the textile curriculum in conjunction with textile industrial players so as to be at par with the needs of the industry” (ibid., p. 77).

Oluoch is not alone in that observation. In the *Kenya Apparel and Textile Industry: Diagnosis, Strategy and Action Plan*, the World Bank reports that the TVET institutions “tend to emphasize fashion and design…rather than focusing on basic skills associated with production technology, and processes, equipment maintenance, and multi-skilling” (World Bank Group, 2015, p. 19). The TVET institutions offer a limited amount of training activities that reflect the current production trends, such as spinning, weaving, and textile exploration. This has resulted in a mismatch between the supply and demand of relevant technological capabilities. The World Bank explains that because of this mismatch “the production skills which are key to the sector are not supplied, and the graduates of training institutions are not readily employed” (ibid., p. 21). To mitigate this mismatch, the World Bank has encouraged the TVET institutions to establish relationships with industry partners (ibid.).

Lindsay Whitfield and Cornelia Staritz, on the other hand, contemplate the costs and benefits of formal learning in the accumulation of technological capabilities. In particular, the scholars evaluate the Ethiopian-owned enterprises that acquire certification in order to enhance their technological capabilities. A certificate “indicates production processes or products that meet an international business standard,” such as labor and safety standards, and quality control management systems (Whitfield, Staritz, 2017b, p. 20). It is a requirement to enter and be competitive in the global textile and apparel value chain, such as the export market. However, the authors explain that the certification process is expensive and involves “paying for accreditation and annual maintenance of the certificates” (ibid., p. 21). Whitfield and Staritz conclude that formal learning is “a
costly process and takes time, and thus many local firms are experiencing losses or just break even in their export business due to their low productivity (vis-à-vis international standards) combined with low prices set by buyers” (Whitfield, Staritz, 2017b, p. 38). To combat the expenses, the enterprises either “depend on the government to subsidize the cost” or “use the domestic market as a means to subsidize the cost of learning to compete” (ibid., pp. 31, 38). Whitfield and Staritz conclude that the certification process is worth the costs because participation in the export market allows the enterprises “to increase their knowledge on production processes and product design and reach international best practices (i.e. in order ‘to learn’)” (ibid., p. 38).

Ulrich Elmer Hansen and David Ockwell examine the extent to which the adoption of different learning avenues explains the differences in the accumulation of technological capabilities. The academics contend that the enterprises in developing countries who depend on “a combination of learning from foreign technology partners and internal learning...make most progress in terms of technological capability” (Hansen, Ockwell, 2014, p. 617). The enterprises who “pursue learning from foreign partners” achieve an advanced level of technological capabilities, whereas those who depend on local spillovers, such as learning from imitation of local competitors, do not “advance beyond extra basic operating technological capabilities” (ibid., pp. 617, 628). Likewise, Tran Ngoc Ca assesses the accumulation of technological capabilities in developing countries and the learning process for these technological capabilities in the textile and apparel sector, such as “learning-by-doing, learning-by-training, by-searching information, or foreign connections” (Ca, 1997, p. iv). He comments that the combination of “active learning-by-doing” and “foreign connections mechanism is significant for learning production and investment capabilities” (ibid., p. 260). He continues that the importance of prior experience cannot be understated. An enterprise with prior experience is able to move from “simple learning mechanisms to more complicated ones; from one source of learning to more diversified ones; and from one to more types of TC acquisition” (ibid., p. 261).

The problem with the literature on the contributions of formal learning is the concentration on the global textile and apparel value chain at the cost of a more
nuanced comprehension of the local market. In other words, the interest is in the extent to which the entrepreneurs accumulate the technological capabilities needed to enter and be competitive in the global textile and apparel value chain with little consideration of the local market. The local market is perceived as a means to enter the export market rather than an end point in itself. Even the literature that looks at economic growth and industrial development in the local market looks at it in relation to the regional and international levels (Hansen, Ockwell, 2014; Otieno, 2013; Bloom et. al., 2006; Ca, 1997). For instance, Daniel Otieno presents the assessment of the local market in terms of how it is able “to remain relevant in the global arena” (Otieno, 2013, p. 19156). I adopt the opposite approach: I put the local market and the entrepreneurs in the local market at the center of the analysis. I assess all of the avenues that the entrepreneurs undertake to accumulate the technological capabilities needed to enter and be competitive in the local market rather than the global one.

On the other side of the coin, a large part of the literature is interested in the impact of informal apprenticeships on the accumulation of technological capabilities (Wamalwa et. al., 2020; Chong, 2019; Apunda et. al., 2017). For example, the ILO describes in great detail the advantages and disadvantages of informal apprenticeships in Africa. An informal apprenticeship is defined as a system in which “a learner (the apprentice) acquires the skills for a trade or craft in a micro- or small enterprise, learning and working side-by-side with an experienced craftsperson” (ILO, 2012, p. 1). The ILO explains that an informal apprenticeship is “cost-effective training system since tools and equipment are already available in the enterprise” (ibid., p. 2). It is integrated into the production process. That said, the ILO asserts that an informal apprenticeship is a limited learning opportunity. This is because the “experienced craftsperson” lacks access to “new learning,” such as linkages with large enterprises, which in turn “confines them to a limited pool of knowledge and impedes them from catching up with new technological developments” (ibid., p. 46). In order to address this deficit, the ILO advises linking informal apprenticeships with the formal education and training system, and with the formal economy, such as including informal apprenticeships in the national training system (ibid., pp. 99-101). This will “enable the experienced craftspersons and apprentices to improve productivity of the enterprise, increase income and diversify
products and services, and potentially broaden the customer base,” such as access to the average consumer in the global value chain (ibid., p. 46).

Likewise, Edwinah Amondi Apunda et. al., assess the technical skills that the tailors in the informal sector in Kenya acquire through traditional apprenticeships (e.g., working alongside master tailors). The authors explain that the apprentices “do acquire basic technical skills for immediate application to ongoing tailoring activities…however, the apprentices do not acquire the technical knowledge that underpins that trade” (Apunda et. al., 2017, p. 341). The technical knowledge includes the principles of pattern drafting, construction and finishing processes, clothing product quality, and design. This is because the traditional apprenticeships tend to “lack structure and suffer from a weak theoretical basis, and instead focus on learning technical skills by observing and imitating” (ibid., p. 344). In addition, the “master tailors” often lack the pedagogical skills and technical knowledge needed to transfer trade-specific technical skills and knowledge to apprentices. Apunda et. al., conclude that the master tailors “require interventions which provide them with opportunities to upgrade their technical knowledge and skills, as well as their pedagogical skills,” and apprentices need “opportunities to access complementary training in practical and theoretical knowledge” (ibid., p. 358).

Bessie Chong approaches the field from a fresh perspective. She is an advocate for an integrated approach: the combination of formal and informal learning to “transform the quality of workforce in the textile and apparel industry” (Chong, 2019, p. 96). She considers the “You Can Code” campaign created by Esquel Group (a Hong-Kong-based textile and apparel provider). The aim of the campaign is to strengthen the technical capabilities of the “less technically minded employees into confident users of technologies” via formal training for computational thinking development and informal learning for digital involvement, such as “a series of digital experiential learning activities” (ibid., pp. 96-104). Chong contends that the integrated approach contributes to the accumulation of technological capabilities, creating a more “stable and skilled workforce” that is able to think in “more systematic and innovative ways” and solve problems at the workplace (ibid., pp. 100-104).
In a similar fashion, Herbert Wamalwa et. al., evaluate all of the learning avenues that enterprises seek out in order to accumulate capabilities. These capabilities enable an enterprise “to innovate and increase its competitiveness” (Wamalwa et. al., 2020, p. 80). The authors contend that the most essential learning avenue for an enterprise, especially an MSME in a developing country “with minimal resource endowments,” is the development of the capabilities of their owners and their employees (ibid., p. 93). For example, an enterprise with an experienced owner is better able to recruit those with the “skill levels to handle technical and managerial responsibilities” (ibid., p. 88). The second and third most important learning avenues are training and intensive inter-firm interactions. The third, in particular, is important because most enterprises in developing countries “have limited resources to draw on market mechanisms,” and thus need to be “embedded in local networks…in their ecosystem” (ibid.). Wamalwa et. al., stress that it does not matter whether these activities take “a formal or informal nature” (ibid.).

Paulo Figueiredo is interested in the extent to which intra-firm learning processes influence inter-firm differences in technological capability accumulation, especially the latecomer enterprises. He defines learning as “the various processes by which additional technical skills and knowledge are acquired by individuals and, through them, by the organization” (Figueiredo, 2003b., p. 609). These intra-firm learning processes include formal and informal activities, such as external and internal knowledge acquisition, knowledge socialization, and knowledge codification. He points out that the latecomer enterprises “lack even the basic technological capability” and “are normally dislocated from the main international sources of technology, research and development, universities, and the mainstream international markets” (ibid., p. 608). Therefore, the latecomer enterprises need interventions with “international levels of innovation and techno-economic performance” in order to catch up and become competitive (ibid., p. 639). In addition, the latecomer enterprises need to make “purposeful, continuous, and effective efforts…to generate positive implications for the manner and rate of accumulation of diverse types and levels of technological capability” (ibid.). Even so, Figueiredo warns that the accumulation of technological capabilities is
not an automatic process, and more often than not, the latecomer enterprises fail on the technological frontier.

The problem with the literature on informal apprenticeships is the assumption that the experienced tailors (e.g., experienced craftspersons and master tailors) lack the technological capabilities to train their apprentices (Apunda et. al., 2017). This is because the entrepreneurs lack access to advanced learning avenues that impart knowledge of innovation; therefore, the entrepreneurs accumulate a basic level of technological capabilities, especially in product design and product development (ILO, 2012, p. 18). Whereas in the case of Mombasa and Nairobi, the experienced tailors accumulate an intermediate to advanced level of technological capabilities. The entrepreneurs do more than “copy designs from fashion charts, magazines, and photos" or "show new apprentices how to use a measuring tape to take and record measurements" (Apunda et. al., 2017, p. 354). The entrepreneurs accumulate the design knowledge and skills to anticipate the expectations and preferences of the local consumer. Thus, an informal apprenticeship is an avenue in which an entrepreneur can accumulate a higher level of technological capabilities. While I contend that the tailors tend to lack the theoretical background of fashion and design, such as the principles of proportion and scale, this is not necessarily a deficit. The entrepreneurs do not prioritize fashion and design because it is not a prerequisite to enter and be competitive in the local market. Since most of the merchandise is made-to-measure, the entrepreneurs prioritize the practical aspects. Therefore, the tailors seek out opportunities to accumulate technological capabilities in investment and innovation.

The same is true for the literature on the combination of formal and informal learning. The assumption is that the “less technically minded employees” or “latecomers” perform less well or with less success than expected (Chong, 2019, p. 96; Figueiredo, 2003b, p. 639). This is because these enterprises cannot “afford” formal learning mechanisms with expatriates and technical personnel “who come with high level knowledge (Wamalwa et. al., 2020, pp. 89-91). Thus, the enterprises depend on the experience of their owners and their employees “who have basic education” (ibid.). The consensus is that the entrepreneurs need formal and informal interventions at the national or
international level in order to accelerate the catching-up process, especially in regard to technology. However, based on the interviews conducted in Mombasa and Nairobi, the entrepreneurs are not concerned with “catching-up” to the technical level of the entrepreneurs in the global textile and apparel value chain (Figueiredo, 2003b, p. 639), but rather competing with each other in the local market. The entrepreneurs think outside the box in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

Last but not least, there is a strand of literature that considers learning and technological capabilities in a broader context (Saha et. al., 2019; Bowman et. al., 2017; Salinger et. al., 1999). For instance, Amrita Saha et. al., examine the technology exchange between India and Tanzania, and the extent to which that exchange contributes to the development of capabilities in the Tanzanian textile and apparel sector. The scholars share that the technology exchange is able to “contribute towards developing absorptive capacity i.e. ability to identify, assimilate and exploit knowledge” (Saha et. al., 2019, p. 1). This capacity is a “a key enabling variable for technology transfer, leading to innovation and economic growth, thus inducing self-learning over time” (ibid., p. 3). Thus, Saha et. al., suggest that the Tanzanian textile and apparel sector expands the existing South-South cooperation in order to promote “the exchange of capital goods between these countries,” especially since these technologies appear to be more affordable and accessible (ibid., p. 22).

Lynn Salinger et. al., look at the competitiveness of the textile and apparel manufacturing firms in South Africa. The authors comment that “South African firms must learn to contend with the pressures of globalization in their industries” in order to compete in the global textile and apparel value chain (Salinger et. al., 1999, p. 4). To cope with the steep learning curve, the authors advocate that the firms “experiment with alternative ways of doing business,” such as with forms of labor relations, information management systems, and product lines (ibid., p. 2). This, in turn, will introduce a wave of innovation, “changing the way countries and their firms will challenge each other in the market arena” (ibid., p. 8). One alternative way of doing business is for the firms to perceive the assembly line as “a potential source of process innovation” or a “partner in
the process of learning to compete” (ibid., p. 27). The labor source is able to shorten the learning curve via sharing knowledge and skills, which in turn improves their productivity and improves the competitive position of the firms. Salinger et. al., conclude that firms “with almost any mix” of capabilities can be competitive (ibid., p. 28). There is not a single route to success.

Andrew Bowman et. al., are concerned with the “character of experiment and learning” in economic life and political life (Bowman et. al., 2017, p. 128). Based on three case studies, the authors assert that business models and government policies are “failing the national economy” (ibid., p. 116). This is because the corporate business model is about “point value and passing risk, while avoiding social responsibility and the obligation to provide reasonable quality, sustainable, everyday economic services at accessible prices” (p. 28), and government policies treat the economy as an “abstract single reality” rather than an economic zone of activity that produces “mundane” goods and services (ibid., pp. 117-118). There is “a commitment to an abstraction – a particular version of competition, market, and how to value transactions” (ibid., p. 143). In that sense, there is no more learning in economic life and political life. Bowman et. al., recommend an alternative approach: the foundational economy. This economy allows businesses to build “new kinds of organizational capabilities internally” without stakeholder claims, and enables people to “flourish and develop their capabilities” (ibid., pp. 28, 123). In addition, this economy encourages new versions of learning; a new set of economic and political experiments (ibid.).

I do not challenge or dispute the literature that looks at learning and technological capabilities in a broader context (Saha et. al., 2019; Bowman et. al., 2017; Salinger et. al., 1999). It is important to consider how the introduction of new technologies and operation procedures influences the process of accumulation of technological capabilities (Saha et. al., 2019; Salinger et. al., 1999), or the extent to which the business environment (or lack thereof) is conducive to learning (Bowman et. al., 2017). However, I am interested in all of the learning activities that the entrepreneurs assume in order to accumulate the technological capabilities required to enter and be competitive in the local market. I am interested in what the entrepreneurs do themselves
to enhance or expand their technological capabilities, such as participating in an apprenticeship or watching a tutorial video.

For that purpose, I put the local market at the center of the analysis, drawing attention to the technological capabilities essential to enter and be competitive in the local market rather than in the global market. I contend that all forms of learning are crucial to the accumulation of technological capabilities, from the acquisition of expertise to the development of knowledge. In addition, I explain the extent to which informal learning is a more appropriate avenue for the entrepreneurs who want to compete in the local market. This is because informal learning is all about practical application rather than theoretical conceptualization. In the context of the local market, formal learning is a supplement to informal learning, rather than vice versa.

**The Technological Capability Matrix**

I use the technological capability matrix to evaluate all of the avenues that the entrepreneurs in the local market undertake as a means to accumulate technological capabilities, including formal and informal avenues. The matrix is more than a visual representation of the technological capabilities needed to enter and be competitive in the local market. The tool is designed to “capture the dynamism of learning” for each of the categories of entrepreneurs (Yuri, Mai, 2010, p. 3).

In the technological capability matrix, I do not dismiss the value of formal or informal learning activities. This is important as the accumulation of technological capabilities occurs in more than one manner, from minor adjustments and routine operations, to major improvements and product development. The aim is to understand how the learning process works in the local market. In addition, I draw attention to the extent to which the entrepreneurs enhance and expand their technological capabilities. The entrepreneurs seek out “upgrading opportunities” in the local market to accumulate technological capabilities (Schmitz, 2006, p. 546). For example, a tailor watches YouTube videos on new stitching techniques, or a fashion designer obtains a patent on a new design. The matrix is able to capture the “achievement of learning that extends across the whole range of activities” (Yuri, Mai, 2009, p. 25).
It must be acknowledged that there is a danger in making broad generalizations. Each of the entrepreneurs in the local market pursues a different technological capability accumulation path. Learning is diverse. It is not an automatic process. Technological capabilities “may be accumulated in different directions and at different rates” (Figueiredo, 2002, p. 74). Therefore, the chapter paints an overall picture of how the entrepreneurs accumulate technological capabilities. This picture is based on the statements of the interviewees and the assessment of those statements.

The Local Market: The Level of Technological Capabilities

In order to enter and be competitive in the local market, the entrepreneurs have little choice but to be persistent in the accumulation of technological capabilities in investment, production, innovation, logistics operations, and linkages. The entrepreneurs with only a basic level of technological capabilities run a risk of becoming insolvent or obsolete. This is because a basic level of technological capabilities leads to an incremental change that is not sustainable or transformative. An intermediate or an advanced level results in a substantial change that impacts the competitive circumstances. Therefore, all of the entrepreneurs in the local market search for activities to learn or improve “their production process, attain consistency and high quality, and increase their speed of response to customer order” (Schmitz, 2006, p. 555). These include formal and informal learning activities.

Tailors

With the exception of the machine operators and fundis, all of the tailors achieve at least an intermediate level of technological capabilities in production management, product development, and consumer relations, but lack the technological capabilities in sourcing time, product design, logistics and distribution, and branding and marketing. The rest of the technological capabilities rank somewhere in between. The machine operators and fundis lack the technological capabilities in almost all areas, with the exception of production in pieces.

The tailors accumulate the technological capabilities needed to enter and be competitive in the local market via formal and informal learning activities. The formal
learning activities involve attending a national polytechnic and participating in a workshop; whereas the informal learning activities include assuming an apprenticeship and watching a video online. It is important to point out that the tailors lean towards informal learning activities. This is because informal learning allows them to accumulate practical technological capabilities. Informal learning is hands-on. For the most part, the tailors participate in two avenues of informal learning: apprenticeships and the internet.

**Informal Learning: Apprenticeships**

It is important to differentiate between an internship and an apprenticeship. In the local market, an internship is a structured, short-term (one to three months) agreement in which an experienced entrepreneur trains an inexperienced entrepreneur in the workplace. The term is used to describe a formal learning experience that combines knowledge and theory learned in the classroom with practical application and skills development in the workplace (Republic of Kenya, 2016, pp. 35-36). More often than not, an internship is approved or arranged with a higher education institution. An internship is sometimes referred to as an attachment.

An apprenticeship on the other hand, is an unstructured or semi-structured, long-term (one to three years) arrangement in which an experienced entrepreneur trains an inexperienced entrepreneur at home or in the workplace. Unlike an internship, an apprenticeship has:

No rigid rules or time constraints about the duration an apprentice would take to learn the trade. Once a learner entered into an apprenticeship his [sic] acquisition of skills would depend entirely on his aptitude, and the quantity and variety of work the owner/trainer was undertaking. A trainee could exit and seek employment elsewhere or start his or her own business, at any point he or she felt ready. (Atchoarena, 2000, pp. 136-137).

There is no contract or written agreement. There is no certificate of recognition upon completion. The term is used to describe an informal or semi-formal learning experience that is technical in nature (Lagat, 2021).
The tailors undertake apprenticeships in order to accumulate at least an intermediate level of technological capabilities in all areas. These arrangements allow the entrepreneurs to enhance and expand their technological capabilities through observation and practice. It is hands-on instruction (Teal, 2016, p. 268). Dr. Osawa Otta is the Deputy Director at Research TVETA. He asserts that “most of the artisans in the informal sector have acquired and perfected various skills through apprenticeship and learning on the job” (Osawa Otta, Interview, 26 March 2020). For example, Priscilla is a custom tailor in Mombasa. After she graduated from KHTI, she accepted a six-month, unpaid apprenticeship with the institute in order to achieve a higher level of technological capabilities in production. She yearns to “perfect” the production of shirts and trousers, especially male trousers (Priscilla, Interview, 18 October 2019).

In a similar manner, Veronica is a custom tailor and the Owner of White Rose Fashions in Mombasa. She entered into the local market as a fundi on the side of the road. She received a sponsorship to attend Mombasa Technical Training Institute (MTTI), and later assumed an apprenticeship with another tailor. She was able to accumulate an intermediate to advanced level of technological capabilities from these formal and informal learning activities. She saved enough money to rent a shop in Mombasa. Now, Veronica opens her shop to other students:

There are some women who admire my work. Some come in the morning until lunch time, from lunch time until the evening. Some come in the evening until eight, and then we close the shop. As long as I give it to the right pupil, I give her the work and then I go on doing my job. It does not cost me anything. (Veronica, Interview, 11 October 2019).

She uses the handbook from MTTI to train 5 to 15 students per month. The handbook states step-by-step instructions on “how to measure; how to read inches and centimeters; how to use the sewing machine; how to take the measurements of a simple dress; how to divide the measurements; how to draw the patterns,” see Image 9 (ibid.). The students new to the trade with no technological capabilities bring in brown parchment paper to practice drawing patterns, cutting out pieces, and stitching the pieces together, see Image 10. The brown parchment paper is accessible and
affordable in the local market, used to wrap tea leaves or books (Veronica, Interview, 11 October 2019; Elizabeth, Interview, 21 October 2019). Once a basic to high-basic level of technological capabilities in production is achieved, the students move to fabric. Veronica charges the students 1,500 to 2,000 KSH (circa 13.63 to 18.18 USD) per month.

Image 9: Mombasa Technical Training Institute Handbook
In a similar fashion, Idris is a fundi on the side of the street in Mombasa. He accumulated a basic level of technological capabilities from other fundis on the street. He explains, “If you go this street, you will see many tailoring” (Idris, Interview, 12 October 2019). Now, he sets aside time each week to teach one person “How to use the machine. How to be very careful. How to fold the clothes” (ibid.). Idris adds, “I teach for free because I learned for free” (ibid.). This form of apprenticeship is an avenue for the entrepreneurs to accumulate at least a basic level of practical skills in operating a machine, sewing straight lines, and sourcing materials.
Peter Awino, on the other hand, is the Secretary of the AKT. He accumulated a basic to intermediate level of technological capabilities through an apprenticeship with a family member. He explains:

So, I ended up, myself, in tailoring because my uncle, one of my uncles, was doing it. So, he just told me, “Come and I will teach you for free.” I went and I learned, I learned more and now because of him, he was only doing trousers, so he taught me only trousers, but through my learnings, I did everything. I learned everything from different places so by doing, so I came to realize that I can make it in tailoring. (Peter Awino et. al., Group Interview, 19 March 2020).

Awino learned through observation and then extended practice. Later, he accepted an apprenticeship from a friend who produces dresses (ibid.). The second apprenticeship allowed him to enhance his product line and expand his client relationships. He moved up a level in technological capabilities in production and linkages.

In addition, the tailors take on apprenticeships at EPZs in order to accumulate technological capabilities in production, such as equipment management and production in pieces. This is because the EPZs operate with modern equipment. For example, Issac Maluki is the CEO and Founder of Shona EPZ Ltd. He explains that during the low season, he and his supervision team train those who want to learn how to use the different sewing machines, such as Jack and Siruba. He and his supervision team “train them, and then we upscale” (Isaac Maluki, Interview, 16 March 2020). The training period is about two weeks. In addition, Maluki states that he allows the tailors to move around after hours in order to test out and practice on the equipment:

So, usually, work ends at 4:30. Most of the people right now are able to meet their target at 4:30, latest 5:30. An extra hour. But our supervisors usually have another meeting. Just to discuss what happened for the day, and what they planned for the next day. So, that is an extra hour that they stay in the factory. Just our supervisors. During that time, if there is a tailor who wants to learn anything, they have that extra hour. So, they can stay in. (ibid.).
Maluki asserts that the apprenticeship allows the entrepreneurs to accumulate a higher level of technological capabilities in equipment management, “improving the efficiencies” of a particular line (ibid.). Maluki is not alone in that sentiment. Veronica encourages her students to “go to EPZs and work” in order to advance from a basic to an intermediate level of technological capabilities (Veronica, Interview, 11 October 2019). She explains that these apprenticeships are important for practical skills development.

Fridah is an example of how this occurs in practice. She is an Instructor at Kisauni Polytechnic who participated in formal and informal learning activities in order to enter and be competitive in the local market. This includes an apprenticeship at an EPZ enterprise. Fridah took part in a short-course in fashion and design at a NITA-affiliated TVET institution, but felt like she was “waiting in the training period. So, I decided to work. So, I went to the EPZ” (Fridah, Interview, 14 October 2019). She participated in a one-year apprenticeship to accumulate the technological capabilities in production. She enhanced her capabilities to produce more merchandise in less time.

The tailors participate in apprenticeships in order to accumulate technological capabilities in all areas, but in particular production. Most of the entrepreneurs acquire the skills to put together basic (trousers), intermediate (blouses), and complex (collared shirts) products in an efficient and effective manner. The entrepreneurs participate in apprenticeships until their desired level of technological capabilities is achieved. This informal learning avenue allows the entrepreneurs to enter and be competitive in the local market, at least for some time.

In addition, a substantial proportion of the tailors partake in apprenticeships at EPZs. This is because the EPZs operate with the most up-to-date equipment and administer standard practice for stitches and seams. Thus, the entrepreneurs achieve a higher level of technological capabilities in equipment, equipment management, production, and consumer standards. This informal learning avenue is pivotal to their success in the local market. The apprenticeships at EPZs serve as an example of how the tailors participate in activities that extend from the global textile and apparel value chain in
order to accumulate technological capabilities needed to enter and be competitive in the local market.

Although the apprenticeships at EPZs adhere to the standards of the global textile and apparel value chain, the tailors acquire the practical skills of the trade. In that sense, the global production process shapes the technological capabilities of the entrepreneurs. However, the tailors proceed to adapt those practical skills to adhere to the standards of the local market, such as the standard sizes.

*Informal Learning: Internet*

Another avenue of informal learning is the internet. The tailors use the internet in order to accumulate technological capabilities in investment, production, and innovation. For example, Priscilla is a custom tailor in Mombasa. She pays attention to videos on the internet, such as YouTube, to pick up on new production techniques. She shares, “I do not like making jackets, but when you go to YouTube, you can get someone who does it with a simpler method and you get interested in doing it. It is all about simplicity, modifying, and all that” (Priscilla, Interview, 18 October 2019). In addition, she explains that she stays up-to-date with consumer expectations and preferences via the internet:

> It has played a big role in the industry. Yes, it has. It has. Because, sometimes, you cannot just be moving everywhere to see what is trending, but the moment you go online, or maybe you go to YouTube and you just type, trending trousers, trending pants. I use YouTube, Instagram. The power of social media [is substantial]. (ibid.).

In doing so, Priscilla takes advantage of the internet to accumulate technological capabilities in investment and production, such as market research and production management.

In a similar manner, Elizabeth is a custom tailor in Mombasa. She comments, “Patchwork. I learned it online. YouTube” (Elizabeth, Interview, 31 October 2019). She continues that YouTube is a valuable tool to learn different decoration techniques. From the internet, Elizabeth has accumulated technological capabilities in innovation, namely, production development. She collects information on how to improve an existing product
in order to satisfy the expectations and preferences of the local consumer, such as replacing the pocket of a shirt with kitenge print (ibid.).

The tailors use the internet to accumulate a higher level of technological capabilities in investment, production, and innovation. It is a valuable tool “to get more ideas, to learn more” (Priscilla, Interview, 18 October 2019). The entrepreneurs teach themselves the basic stitching techniques, such as how to make a buttonhole. In addition, the tailors collect information on middle and high-end market fashion trends around the world. This is important as those trends will present themselves in the local market in the form of second-hand clothes or new imports. The internet allows the entrepreneurs to prepare themselves on how to alter those designs to adhere to the expectations and preferences of the local consumer. This informal learning avenue is a strategic decision to become competitive in the local market.

It is important to bear in mind that the analysis of this informal learning activity is context specific to Mombasa and Nairobi. Due to a digital divide between rural and urban areas (Butt et. al., 2013, p. 107), I imagine that the entrepreneurs with limited access to the internet seek out alternative avenues to YouTube in order to accumulate technological capabilities. This is a potential area for future research.

**Combined Learning**

Informal learning is not the sole answer to enter and be competitive in the local market, especially since the availability of apprenticeships is limited in the local market. Not all of the experienced entrepreneurs provide opportunities for the inexperienced entrepreneurs to gain hands-on work experience. Therefore, the entrepreneurs pursue a combination of learning in order to accumulate an adequate and sustainable level of technological capabilities. Most of the tailors accumulate a basic level of technological capabilities via informal learning activities and then move up from a basic to an intermediate level via additional informal learning activities or a combination of formal and informal learning activities. This allows the tailors to enter and be competitive in the local market.
The tailors who participate in the combination of formal and informal learning activities tend to have worked in the local market for a period of time, or secured access to capital via alternative means, such as a savings account or side hustle. The entrepreneurs who adopt the dual approach tend to be more competitive in the local market. This is because these entrepreneurs accumulate the practical skills and theoretical knowledge of the trade. The tailors participate in two avenues of formal learning: internships and TVET institutions.

*Formal Learning: Internships*

The tailors participate in internships in order to accumulate technological capabilities in all areas, especially investment, production, and linkages. Most of the enterprises that provide internships operate with modern machines. The entrepreneurs learn how to mass-produce on industrial-scale equipment (Madhu Shah, Sagar Shah, Group Interview, 13 March 2020). This is valuable for the entrepreneurs who want to enhance or expand their current operations. In addition, internships allow the entrepreneurs to meet with other entrepreneurs in the local market, such as suppliers or wholesalers. These connections could be valuable to enter and be competitive in the local market.

The main reason though that the tailors accept internships is because of the potential employment opportunities. Internships provide opportunities for the entrepreneurs to enter the local market. For instance, Sagar Shah is the Manager at Alpha Knits Ltd. – a local textile and apparel manufacturer that employs between 250 to 600 individuals each year. He uses internships as a recruiting tool to hire reliable tailors. He explains that he would rather employ “experienced people” than “start from scratch” (Madhu Shah, Sagar Shah, Group Interview, 13 March 2020). Therefore, internships serve as a gateway to early career opportunities.

Mandalia is in agreement with Shah. Mandalia is the Owner of Tailor Madhvaji Arjan. He reveals the importance of internships for recruitment:

> I am on good terms with local institutions, so what happens, I normally tell them, “You got any of these youngsters who are studying at your university or your college that want a job?” I normally ask them to send
them for internships. During the internship period, I will analyze what they know and what they do not know. So, from there I can tell the school, “This is not right.” I train them…some of them do not even know how to hold scissors. (Mandalia, Interview, 19 October 2019).

Mandalia prefers to hire from a pool of interns rather than strangers on the street. These examples indicate that internships allow the tailors to achieve the baseline of technological capabilities needed to enter the local market.

It is important to point out that the tailors who participate in internships accumulate a lower level of technological capabilities than the tailors who participate in apprenticeships. This is because the formal learning opportunity is shorter in timeframe. The entrepreneurs have less time to observe and practice the trade. For example, Mehul Shal is the Director of Omega Apparels Limited. He contends that the interns lack the technical expertise (Mehul Shah, Alice, Group Interview, 18 March 2020). He gave the example of an “apprentice who cuts the pattern, will look at the design, will probably come up in an hour or so. And we had one trainee [intern] who came in who took the whole day and could not manage it” (ibid.). Internships allow the entrepreneurs to enter the local market rather than be competitive.

Formal Learning: TVET Institutions

The tailors attend TVET institutions in order to accumulate technological capabilities in all of the categories. The tailors that participate in the TVET institutions settle on the extreme sides of the spectrum: inexperienced or experienced. The inexperienced tailors attend the TVET institutions in order to accumulate the basic to intermediate level of technological capabilities needed to enter the local market. These entrepreneurs have little to no work-related experience in the trade. For example, a student who completed a home economics course in clothing and textiles at secondary school. Meanwhile, the experienced tailors attend the TVET institutions in order to accumulate the intermediate to advanced level of technological capabilities needed to be competitive in the local market, as well as obtain recognition for previous informal learning experiences. These entrepreneurs have at least five years of work-related experience in the trade. For
example, a machine operator who has worked at an EPZ enterprise for the last decade, or a fundi who has worked on the side of the road for more than ten years.

The TVET institutions “offer programs that equip the graduates with quality and relevant skills and competencies to meet the needs of the labor markets” (Ministry of Education, 2016). These institutions include vocational training centers (VTCs), technical and vocational colleges, and national polytechnics, such as KCNP, see Image 11 (Osawa Otta, Interview, 26 March 2020).

![Image 11: Clothing and Fashion Section, Kenya Coast National Polytechnic](image)

NITA and KNEC administer the academic, national, and technical examinations at the TVET institutions. NITA is responsible for the certificate-level courses in dressmaking, tailoring, and sewing machine operator, and the five industrial training centers: NITA Athi River, NITA Kisumu, NITA Mombasa, NTIA Nairobi, and NITA Textile Training Institute (N-TTI) in Nairobi (NITA, 2020). KNEC is responsible for the artisan, craft, and
diploma-level courses in fashion design and garment making, and the national vocational certificate in education and training (NVCET) program (KNEC, 2020). For the most part, the inexperienced tailors participate in the NITA-affiliated TVET institutions in order to accumulate a basic to intermediate level of technological capabilities. This is because the curriculum is informal in nature. The NITA curriculum is at least 80 percent practical and 20 percent theoretical; whereas the KNEC curriculum is at most 30 percent practical and 70 percent theoretical (Eileen Nguthari, Interview, 19 March 2020; Keith et. al., Interview, 21 February 2020). For example, Khadija Ridhwan is the Head Instructor at the KHTI. She explains that the tailors prefer the NITA curriculum over the KNEC curriculum “because we do it practically, and they are going to face some challenges, practically. So, they do not rely on theory” (Khadija Ridhwan, Interview, 7 October 2019). This informality in a formal context is appealing to the entrepreneurs who want to learn the basics to enter the local market. The informal learning opportunities supplemented with formal learning opportunities are crucial to success in the local market.

In a similar manner, Mary is an Instructor at the NITA-affiliated TVET institution: Delight Tailoring and Fashion Design School. She teaches the practical skills needed to enter and be competitive in the local market to more than 45 students each term. This includes a basic level, such as “the parts of the machine and how to control the machine,” and an intermediate level, such as “the basics of fashion, those basic things like attaching zips, attaching waistbands,” and “how to stitch neat lines” (Mary, Interview, 6 February 2020). On the other side of the coin, Elizabeth is a student at Delight Tailoring and Fashion Design School. She explains that the school has taught her “how to use the machine, this sewing machine [manual], and also the electric” (Elizabeth, Interview, 21 February 2020). Elizabeth adds that she turns to Pinterest and YouTube to help her better understand the material in class: “I find when, if I started to make a shirt, and maybe, maybe I have not understood much, I may go to YouTube and search, like, ‘How to Cut a Trouser?’ and ‘To Knit.’ And I just watch it” (ibid.). The combination of formal and informal learning activities allows Elizabeth to achieve a
higher level of technological capabilities in production: production management, equipment management, and production in pieces.

Dr. Paul Kamau is the Acting Director for the IDS at the University of Nairobi. He concurs that the NITA-affiliated TVET institutions provide opportunities for the inexperienced tailors to accumulate at least the basic skill set. He notes, “Even if you do not get employment, you can start your own business and still be able to attract customers. There are still many people in the country who will go to buy clothes from established tailors” (Paul, Interview, 18 February 2020). The NITA-affiliated TVET institutions allow the tailors to accumulate the technological capabilities to enter and be competitive in the local market.

Meanwhile, the experienced tailors participate in the NITA-affiliated TVET institutions in order to accumulate the intermediate to advanced level of technological capabilities needed to be competitive in the local market. For example, a tailor participates in an advanced course at Delight Tailoring and Fashion Design School in order to accumulate an intermediate level of technological capabilities (Mary, Interview, 6 February 2020). But more so, the experienced tailors attend the NITA-affiliated TVET institutions to be recognized for their technological capabilities accumulated via informal learning avenues. Eileen Nguthari is the Head of the Garments Section and Industrial Training Officer at NITA. She explains that more than 50,000 tailors register for the exam per annum. This is because most of the tailors want to either “learn a trade or a skill” or have their “informal training be recognized” (Eileen Nguthari, Interview, 19 March 2020).

It is important to emphasize that even the most formal and theoretical avenues of learning, such as exams, are spoken about with reference to upskilling, especially in the area of production equipment and technology. This indicates that the tailors seek out learning avenues that provide opportunities to accumulate more technical capabilities rather than administrative or managerial.

The NITA-affiliated TVET institutions recognize the technological capabilities of those in the current workforce. Rona is a Research Officer at KNEC. She asserts that NITA is able to “certify those who have gone through apprenticeship. Those who have trained alongside other tailors” (Keith et. al., Group Interview, 21 February 2020). Rona is not
alone in that sentiment. Dr. Osawa Otta is the Deputy Director at Research TVETA. He reports that this recognition is important for the tailors in the local market. Since the tailors accumulate technological capabilities via informal apprenticeships, “this means that they do not have certificates that can enable them to seek out employment in the formal sector or even register companies” (Osawa Otta, Interview, 26 March 2020). Eileen Nguthari is the Head of the Garments Section and Industrial Training Officer at NITA. She concurs that “Those who have been working as apprentices, and now they feel like, ‘Now, I have been working a while. I want to be assessed, so that I can get a job in sewing’” (Eileen Nguthari, Interview, 19 March 2020). The NITA-affiliated TVET institutions allow the tailors to receive recognition for the technological capabilities accumulated via informal learning activities. This is crucial as the business environment in the local market is changing at a rapid pace, and could require the entrepreneurs to provide certification for employment in the future, such as at EPZs.

There is an increasing demand for TVET institutions in the local market, especially the NITA-affiliated TVET institutions. In 2018, the Kenya Universities and Colleges Central Placement Service (KUCCPS) registered 131 higher education institutions: 30 public universities, 33 private universities, 50 public colleges, 8 private colleges, and 10 national polytechnics (KUCCPS, 2020). In 2020, KUCCPS registered 270 higher education institutions in Kenya: 32 public universities, 6 public university constituent colleges, 34 private universities, 144 public colleges, 40 private colleges, 10 national polytechnics, and 4 teacher trainer colleges. These institutions provide 990 programs: 529 degrees, 215 diplomas, 109 certificates, and 137 artisans (ibid.). The registration doubled in a two-year time span, especially public and private colleges.

One explanation is the flexible nature of the NITA-affiliated TVET institutions. The tailors participate at the NITA-affiliated TVET institutions at their own pace and time, and the tuition is per month rather than year. This is important because even though the tuition for the certificate-level courses is a little more expensive than the diploma or degree-level courses, at least in the long term, the tailors do not need to commit to the entire academic year. For example, the tuition at Delight Tailoring and Fashion Design School is 9,500 KSH (circa 86.44 USD) a month, which is a total of 114,000 KSH (circa
1,037.31 USD) a year; whereas the tuition for KCNP is 56,000 KSH (circa 509.55 USD) per year for two years, or a total of 112,000 KSH (circa 1,019.11 USD) (Mary, Interview, 6 February 2020; Lillian, Rose, Group Interview, 9 October 2019). Mary, Instructor at Delight Tailoring and Fashion Design School, explains that “We pay monthly. So, once you feel like you are done, you stop paying. When you feel like you are tired this month, you do not want to come to school, you do not pay” (ibid.). She continues:

Many students like a flexible school. You know, our school allows students to come in at any time and leave at any time because we are teaching them personally, compared to the other schools around. They teach students as a class. Us, we consider their ability of different students. That is why we teach them personally. We also have evening classes, which most of the colleges do not offer. We also have Saturday classes, which are flexible, anyone is allowed to come, even in the evenings and on Saturdays. (ibid.).

This allows the tailors to participate in the NITA-affiliated TVET institutions until their desired level of technological capabilities is achieved. The tailors are able to come and go at their own discretion.

Another explanation is the financial aid available at the NITA-affiliated TVET institutions. The tailors receive support in the form of financial aid and scholarships to attend NITA-affiliated TVET institutions. For example, Priscilla is a recent graduate of the KHTI. She comments, “Half of my school fees were paid by the County. I came here under sponsorship of the County government. Our area paid 60 percent and then we paid the 40 percent” (Priscilla, Interview, 18 October 2019). Priscilla paid 18,000 KSH (circa 157.89 USD) of the 50,000 KSH (circa 438.60 USD) tuition fee for the one-year program. Ridhwan is the Head Instructor at the KHTI. She states that the County Development Fund (CDF) in Mombasa sponsors 60 to 70 percent of the students who study topics like fashion and design, dressmaking, and tailoring. She shares that the CDF sponsors all 20 of her students because “the government wants them to train practically” (Khadija Ridhwan, Interview, 7 October 2019). Likewise, Lilian is the Head of the Hospitality Department at the KCNP. She contends that “Most of the students, the
government is giving them some compensation. Their fee will be paid by the government. Yes. The government pays for 30 percent for almost everyone” (Lilian, Rose, Group Interview, 9 October 2019). Dr. Osawa Otta is the Deputy Director at Research TVETA. He elaborates, “The government has been giving, providing some funding. Anybody, any student, who is enrolled in our TVET institution is being given some amount of money towards the payment of fees, as well as upkeep” (Osawa Otta, Interview, 26 March 2020).

It is important to point out that financial aid is not available at private higher education institutions. For instance, Robert is an Instructor at Christian Industrial Training Center (CITC). He emphasizes that the lack of government involvement is a challenge:

Enrollment is a problem because…government schools, they have sponsorship from the government, and here [in private schools] we stand alone. So, really, the fee payments, or the fee structures, as you compare, for the private and the government schools, you will see that now the private is much higher. (Robert, Beatrice, Group Interview, 22 October 2019)

CITC is not alone. Geoffrey Karanja is Principal at Evelyn College of Design. He explains that “The fact that we do not have any scholarship poses a challenge because we witness very talented minds just going to EPZs or going home because they cannot afford the fees” (Geoffrey Karanja et. al., Group Interview, 17 March 2020). Thus, the NITA-affiliated TVET institutions allow the tailors to accumulate a basic to intermediate level of technological capabilities without the financial burden.

These reasons are not an exhaustive list. The inexperienced and experienced tailors take part in the NITA-affiliated TVET institutions for other personal and professional reasons. For the most part, however, the institutions allow the entrepreneurs to achieve at least a basic level of technological capabilities needed to enter and be competitive in the local market. The entrepreneurs seek out these formal learning activities due to the informal nature and recognition.
Conclusion

The tailors participate in a combination of formal and informal learning activities in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The tailors undertake informal learning activities with the intention to accumulate technological capabilities in production. These technological capabilities allow the tailors to enter the local market. To put in other words, the tailors enter the local market with practical skills but without theoretical knowledge. This is sufficient in the short term but not sustainable or transformative in the long term. Thus, the tailors undertake other opportunities to accumulate technological capabilities via formal and informal learning activities. These activities in combination allow the tailors to be competitive in the local market.

Fashion Designers

All of the fashion designers achieve an intermediate level of technological capabilities in market research, project preparation, sourcing inputs, production management, product quality control, product design, branding and marketing, consumer standards, and consumer relations, but lack the technological capabilities in sourcing time, equipment, equipment management, production in pieces, logistics, and production development. The rest of the technological capabilities rank in the middle.

The fashion designers aim to accumulate the technological capabilities needed to enter the local market through formal learning activities. This is because formal learning allows them to accumulate theoretical technological capabilities as the foundation for future development. For the most part, the fashion designers participate in at least one of three avenues of formal learning: higher education, internships, and programs.

Formal Learning: Higher Education

Most of the fashion designers pursue a degree or diploma in higher education in order to accumulate the technological capabilities needed to enter and be competitive in the local market. This includes KNEC-affiliated TVET institutions, public and private colleges, and universities. Higher education is an avenue for the entrepreneurs in the local market to accumulate technological capabilities in investment, innovation, and
linkages. The coursework is theoretical in nature with an emphasis on examinations. Higher education is not centered on teaching the technological capabilities in production, such as how to attach a button or operate a machine. That does not mean that higher education is not concerned with areas of production. All of the institutions offer introduction level courses that cover the basics. That said, the courses do not push past a basic level of technological capabilities in production. The aim is to “assess abilities and certify learner achievements in conformity with global standards” (KNEC, 2020).

For example, Waithĩra Mwangi is the Founder and Director at the Ithira. She asserts that it is important for the entrepreneurs to accumulate the theoretical base of fashion and design. Her reason is that “You have to start from knowledge, from a theory” (Waithĩra Mwangi, Interview, 20 February 2020). She continues that it is not possible to enter and be competitive in the local market without the basics. Waithĩra is not alone in that school of thought. Mercy is a student at the School of Arts and Design at the University of Nairobi. She speaks to the value of a higher education. The University of Nairobi provides the foundations in patterns and printing, pattern cutting, and fabric manipulation. She explains, “I used to do sewing but on a small scale. But I did not know the logistics. I did not know pattern cutting was a thing” (Mercy, Interview, 18 March 2020). However, the key criteria to participate in the local market is practical basics. The concentration on theoretical knowledge obstructs the fashion designers from collecting the technological capabilities needed to enter and be competitive in the local market.

Maria is a Test Developer at KNEC. She asserts that the KNEC-affiliated TVET institutions turn out more versatile fashion designers in the local market:

How do they improve their creativity and monitor the trends that are in the market? That is a question or a gap that the market has not been able to fill in because you find that the ones who go through the formal training institutions, like KNEC, they are able to address those issues. If it is diploma level, they are even given managerial skills just apart from, just being, having the tailoring skills, they are given managerial skills and ICT
[Information Communication Technology] skills, so that when they start an enterprise it does not collapse. They are able to sustain it and they are given research skills to be able to know what is going on. So, if they have a little ICT, they are able to monitor through the internet and, you know, it boosts. (Keith et. al., Group Interview, 21 February 2020).

Maria adds that the institutions go beyond the minimal compliance requirements in the local market; the institutions take a proactive approach in teaching other skills, such as business management and information communication technology (ICT) (ibid.). In addition, she contends that KNEC-affiliated TVET institutions allow the fashion designers to be creative: “We need more creativity. We need more fashion consciousness. The fashion designer has to be on top of the game to be able to keep up with a consumer so that they do not go to China and mitumba only” (ibid.). The KNEC-affiliated TVET institutions prepare the fashion designers to achieve an intermediate to advanced level of administrative and managerial capabilities in project preparation, project management, and branding and marketing, and an advanced level of technical capabilities in project design.

That said, the fashion designers cannot depend on a diploma or degree alone. Higher education is not an adequate avenue to accumulate all of the technological capabilities needed to enter and much less be competitive in the local market, such as the technological capabilities in equipment and equipment management. For example, Dr. Osawa Otta is the Deputy Director at Research TVETA. He notes that “most of our TVET institutions, the type of equipment that they were having was sort of becoming obsolete and outdated” (Osawa Otta, Interview, 26 March 2020). Dr. Otta is not alone in this sentiment. Nyacomba ‘Jonas’ Githu is a recent graduate at the School of Arts and Design at the University of Nairobi. She expressed a similar disappointment with the equipment at the University of Nairobi:

We had very old age equipment even for the weaving and even the stuff that they have been using was from time immemorial. I feel like even…our Director who studied there must have used those things. I do not think this
place has ever, ever changed. Likes since the ‘80s or the ‘70s.
(Nyacomba ‘Jonas’ Githu, Interview, 10 March 2020).

Githu explains the University of Nairobi “lacks” in equipment (ibid.). These statements indicate that the higher education institutions teach the fashion designers technological capabilities in equipment that is not always relevant in the local market.

In addition, the higher education curriculum is “in conformity with global standards” rather than local standards (KNEC, 2020). These standards include elasticity of fabrics, protective clothing, the European Union (EU) and the USA size designation of clothes, especially measurements, and thermal resistance of textiles (Hezekiah Bunde Okeyo, Simon Mwombe, Group Interview, 26 February 2020). The special emphasis on the standards in the global textile and apparel value chain does not equip the students with all of the technological capabilities needed to enter and be competitive in the local market. To illustrate, the fashion designers learn how to mass-produce, rather than produce for the individual. Eileen Nguthari is the Head of the Garments Section and Industrial Training Officer at NITA. She explains that the knowledge to measure and make alterations is essential in the local market. The local consumer expects made-to-measure merchandise. This is because “Most Kenyans do not know their sizes” (Eileen Nguthari, Interview, 19 March 2020). The prominence on the standards in the global textile and apparel value chain is not as applicable in the local market.

That does not mean that the higher education curriculum does not provide valuable exposure or experience to the trade. In particular, the fashion designers accumulate a higher level of technological capabilities in market research, production quality control, branding and marketing, and, to an extent, consumer standards. The entrepreneurs invest their time and resources to make sure that the merchandise meets the expectations and preferences of the local consumer. That said, the fashion designers keep the global consumer in the back of their mind, catering all of the designs to emerging global trends. The fashion designers hope to participate in the global textile and apparel value chain one day. This means that the entrepreneurs cannot accumulate more than an intermediate level of technological capabilities in consumer relations. The fashion designers reach their maximum in the number of repeat orders from the same
consumer, especially those in the middle-to-upper income bracket. The fashion designers undertake “unnecessary core courses” that do not adhere to the standards in the local market (ibid.). Therefore, the entrepreneurs need to participate in additional activities to accumulate the technological capabilities needed to enter and be competitive in the local market.

**Formal Learning: Internships**

The fashion designers pursue internships in order to get hands-on experience. For example, Mercy is a student at the School of Arts and Design at the University of Nairobi. She intends to participate in at least one internship in order to accumulate technological capabilities in production and linkages. In particular, she is interested in “speech knowledge” and “to know how to get customers” (Mercy, Interview, 18 March 2020). Mercy stresses that the value of internships cannot be understated. She explains that, at the University of Nairobi, “we are just taught the basics,” but one can “learn more of pattern cutting in a three-month internship than five years in school” (ibid.). This is because the University of Nairobi focuses on “the foundations of learning” rather than the practical application (ibid.). It is important to point out that Mercy would not consider an apprenticeship at an EPZ enterprise because “it will stall your thinking…it will stall your creativity” (ibid.). One reason for this is because these informal learning activities are affiliated with school dropouts or lower-educated individuals. Mercy wants to participate in an internship in order to accumulate technological capabilities in linkages. She wants to acquire market knowledge and product marketing skills.

Val Adhiambo is like Mercy – a student at the School of Arts and Design at the University of Nairobi. She intends to apply to an internship at a fashion house in order to accumulate the technological capabilities in production and innovation. She contends that an internship at a fashion house “concentrates more on the craftsmanship and all that” (ibid.). She wants to work in a niche market, such as leather. This requires a specialized skill set.

Most of the higher education institutions recommend or require their students to participate in internships. For example, Maria Waithera is the Dean of Students at Mcensal School of Fashion Design. She explains that the institution requires all of the
students to intern for at least three months after graduation in order to gain practical experience. The institution sets up the internships with a series of fashion designers (Maria Waithera, Interview, 3 March 2020). In a similar manner, Karanja is the Principal at Evelyn College of Design. He shares that the institution requires all of the students to intern at the end of level four in order to “get a full taste of what the world of work will be demanding of them” (Geoffrey Karanja et. al., Group Interview, 17 March 2020). He thinks that the students need to accumulate real-world experience. James is an Instructor at Vera Beauty and Fashion College. He encourages his students to seek out internships at “private fashion houses” (James, Interview, 6 February 2020). This is because the private fashion houses provide the students with opportunities to develop skills in business management (ibid.). The higher education institutions push their students to participate in internships in order to accumulate technological capabilities in all areas. Internships are considered reputable work experience, especially in the global market.

The fashion designers seek out internships in order to accumulate technological capabilities in production, innovation, and linkages. However, the local market does not necessarily respond well to internships – or nothing but internships. This formal learning activity is not sufficient alone to lead to sustainable employment in the local market.

**Formal Learning: Programs**

The fashion designers participate in programs, such as accelerators, incubators, and masterclasses, in order to accumulate a basic to advanced level of technological capabilities. These programs provide structured instruction or training that is similar to the classroom format (Cohen et. al., 2019). The entrepreneurs in the global textile and apparel value chain organize most of these activities to support the personal and professional development of the fashion designers in the local market. For example, HEVA Fund is an East African program that “invests in the transformative social and economic potential of the creative economy sector in the East Africa region” (HEVA Fund, 2020). Under the HEVA Fund is the HEVA Forums – a learning program that organizes “international exchanges, special skill training workshops, masterclasses, and networking opportunities” (ibid.). Jesse Kang’ethe is an administrator at HEVA Fund. He
explains that the “HEVA Forums is an educational learning space, or the learning space, where we do workshops, trainings, consultations, and the likes, so Fashionomics, forums” (Jessie Kang’ethe, Nehemia Kabugi, Group Interview, 24 March 2020). The purpose is to make sure that the fashion designers “learn something new” (HEVA Fund, 2020). The fashion designers participate in the HEVA Forums in order to accumulate a higher level of technological capabilities in investment and linkages, such as market research and consumer relations. The entrepreneurs network with other entrepreneurs in the local, regional, and global markets. These connections could be valuable to enter and be competitive in the local market.

In the same manner, Mettā is a membership-based “innovation hub” that supports entrepreneurs, innovators, and startups throughout East Africa. Since 2015, Mettā has supported the fashion designers in the local market through the organization of incubators (Mettā, 2020). Daisy Chesang is the Programs and Operations Lead at Mettā Nairobi. She explains the incubators aim to accelerate the growth of fashion designers through intellectual capital, networking opportunities, and professional development. The incubators act as business support services that assist the fashion designers in the areas of financial modeling, logistics, marketing, merchandising, personal branding, and storytelling. She continues that the incubators “support the businesses, helping them understand the aspect of how to run a business because the need here is that most of the fashion designers are skill ready, but they are not business ready” (Daisy Chesang, Interview, 5 March 2020). She believes that business skills, especially financial management, is a needed area of intervention for the fashion designers in the local market. The fashion designers assume activities with Mettā to accumulate a higher level of technological capabilities in investment, especially market research and project preparation. The entrepreneurs build on their administrative and managerial capabilities to start and run an enterprise.

Meanwhile, the British Council is an organization that specializes in cultural and educational opportunities in more than 100 countries (British Council, 2020). Sandra Chege is the Arts and Communication Manager at the British Council Kenya. She discusses how the organization collaborates with other stakeholders to provide
educational opportunities for the fashion designers in the local market. For example, the British Council Creative Enterprise Program is able to deliver “training in business and digital skills, networking events, access to new markets, connections to resources and finance opportunities” (Sandra Chege, Interview, 9 April 2020). Furthermore, in partnership with Mettā Nairobi and Fashion Scout UK, the British Council hosts a six-week fashion incubator that supports the fashion designers in growing their businesses, such as “attracting the right customers, scaling to new markets, finding partners and securing investment” (Sandra Chege, Interview, 9 April 2020). The fashion designers collaborate with the British Council to accumulate technological capabilities in investment. The fashion designers attain project management tools, such as business negotiating, time tracking, and project planning.

The fashion designers participate in all of the programs above and others in order to accumulate a higher level of administrative and managerial technological capabilities. The programs allow the entrepreneurs to achieve a higher level of technological capabilities in certain areas, such as market research, product management, product design, and branding and marketing. In particular, the programs enable the entrepreneurs to build business skills to either start an enterprise or expand an existing one. The problem with the programs is that the content adheres to the standards of the global market rather than the local market. There is an emphasis on the administrative and managerial capabilities (e.g., business negotiating, financial modeling, and time tracking) rather than the technical ones (e.g., straight stitch, pattern-cutting, and seam finishes). While the administrative and managerial capabilities do not hurt the competitiveness of the entrepreneurs, especially in the long run, these capabilities do not assist the entrepreneurs in their pursuit to enter the local market in the immediate future.

The Problem with Formal Learning

The problem with formal learning is the prioritization of technological capabilities in investment over production: theoretical knowledge over practical application. This is a problem as the prerequisite to enter the local market is at least a basic level of technological capabilities in production. For example, the Mcensal School of Fashion
Design provides “work-related qualifications for students taking their first steps into employment, or for those already in employment and seeking career development opportunities” (Maria Waithera, Interview, 3 March 2020). The Mcensal School of Fashion Design offers a level 3 and level 5 diploma in Fashion and Design, and six certificates in Fashion Design. The level 3 diploma in Fashion and Design is one of the most popular programs with nine courses:

1. Fashion Visualization
2. Pattern Development for Fashion and Clothing
3. Production Techniques for Fashion and Clothing
4. Pattern Construction for Fashion and Clothing
5. Garment Production
6. Fashion Promotion
7. Communication in Art and Design
8. Ideas and Concepts in Art and Design
9. Materials, Techniques, and Processes in Art and Design (ibid.).

It is important to note that seven out of the nine courses (or 78 percent) in the standard curriculum allow for the students to accumulate technological capabilities in investment, innovation, and linkages, such as market research, product design, and branding and marketing. Only two out of the nine courses (or 22 percent) permit the students to accumulate technological capabilities in production: production techniques and garment production (Mcensal School of Fashion Design, 2021). Maria Waithera is the Dean of Students at Mcensal School of Fashion and Design. She explains, “By the end of the course, the students do not produce, do not sit for any exam. What the curriculum requires is for the students to come up with portfolios” (Maria Waithera, Interview, 3 March 2020). She continues that the portfolio assignment “gives students an opportunity to be designers, to come up with their own ideas” (ibid.). Therefore, the Mcensal School of Fashion Design encourages the students to enhance their technological capabilities in innovation, but provides limited opportunities for the students to accumulate all of the technological capabilities needed to enter the local market. All of the fashion designers who graduate from the school either register for “a degree program,” or seek out
“employment to get more experience in the workplace,” such as internships at private fashion houses (Maria Waithera, Interview, 3 March 2020; James, Interview, 6 February 2020). The fashion designers do not accumulate all of the technological capabilities needed to enter the local market.

Since investment is given greater importance, and thus not all of the fashion designers accumulate a sufficient level of technological capabilities needed to enter the local market, these entrepreneurs move straight from the formal learning activities to the informal learning activities. This is because the informal learning activities prioritize the technical aspects of the trade and provide the entrepreneurs with multiple opportunities to accumulate a basic to intermediate level of technological capabilities in production. Most of the fashion designers assume informal learning opportunities in the form of apprenticeships. For example, Mercy is a Fashion Design student at the School of Arts and Design at the University of Nairobi. She explains that after graduation:

The first thing is I want to work for someone. I wanted to work for a fashion designer, but I feel like I want to work with a stylist because a stylist works with different fashion designers that way I can know the market. Then, maybe after three or four years, I can go start something of my own because I do not want to just get out and start and I do not know where I am going. I need to know how Kenyans react to things first. (Mercy, Interview, 18 March 2020).

Her statement suggests that she is uncertain about the expectations and preferences of the consumer in the local market. Although she has acquired a degree from one of the top public universities in the country, she has not accumulated the technological capabilities needed to enter the local market. The combination of formal and informal learning activities will provide her with a sufficient level of technological capabilities to enter the local market. The formal learning activities supplement the informal learning activities.

There are some that advise that formal learning activities are a waste of time for those who want to enter and be competitive in the local market. For example, Evelyn Noah is
the Promotion Executive for EPZA. She is of the opinion that an apprenticeship at an EPZ enterprise is more valuable than higher education. From her experience, she believes:

We found that what is being offered in the universities is totally useless for the industry. So, what they would say is when they graduate, some of them now want to come work for the EPZs, so that they learn what happens here because it is more modern than what they have seen. So, there is a lot of disconnect out there. (Evelyn Noah, Interview, 9 March 2020).

In addition, she explains that the entrepreneurs who pursue a higher education:

They are totally dismissed. Anybody coming from the university, KU [Kenyatta University]. There is nothing you get there. There is nothing there. Actually, it is best that you just come here [EPZs] and learn from scratch. Because I know tailors here, all the machinists, have been employed elsewhere from learning here, have gotten jobs elsewhere. I mean because they learn how to really stitch well. Neatly. Straight. Who does not want that? (ibid.).

Noah is not alone in her observation. Eddie is the Owner of Won Design. He explains his hiring process:

I employ them based on their experience, and if they are capable of doing that work. I know, most of the people who come here with a certificate, they are not competent in what I am. Here is not a training camp, training ground. I need something accomplished, I am given an assignment, that is it. Because my clients need something. Somebody with experience is ready to do it, but somebody who has been from school will not be. (Eddie, Interview, 19 October 2019).

In a similar manner, Maria is a Test Developer with KNEC. She comments that the EPZs “absorb a good number of the students who leave [graduate]” from the KNEC-affiliated TVET institutions (Keith et. al., Group Interview, 21 February 2020). This is
because the EPZs provide the recent graduates with the practical technological capabilities needed to enter and be competitive in the local market.

There is the argument that a certificate from a NITA-affiliated TVET institution is more valuable than a degree from a KNEC-affiliated TVET institution. Akinyi Odongo is Executive Board Chair of the KFCO. She concurs that the fashion designers need to reconsider the purpose of higher education in the local market. She remarks, “I am sure designers, sometimes you get interns, and you wonder what they are learning in school. 4 years degree, but they cannot hem. Then you are better off having a certificate student or someone who just learned on the job, and they are better” (Ann McCreath et. al., Group Interview, 26 February 2020). Dr. Osawa Otta is the Deputy Director at Research TVETA. He concurs that, “Most employers would actually go for those who have done the NITA programs because they are much more hands-on. Most of their time, they will do it on the machines, rather than the theoretical aspect of it” (Osawa Otta, Interview, 26 March 2020). He adds that there is “A mismatch between the skills which are required by the trainers, by the industry, as opposed to the skills that we have with our graduates” (ibid.). The statements indicate that higher education alone is not enough to enter and be competitive in the local market. The fashion designers must seek out other opportunities to accumulate technological capabilities.

That does not mean that the fashion designers cannot accumulate a sufficient level of technological capabilities needed to enter the local market via formal learning activities, but rather the fashion designers need to participate in more than one formal learning path, or a combination of formal learning activities. This combination of formal learning activities could look like a higher education diploma and an internship, or a higher education degree and a masterclass. This combination of learning is “much closer to the ‘real world’ of work beyond graduation” (LIFT, 2019, p. 14). For instance, Karanja is the Principal of Evelyn College of Design. He explains that “very few ever go into business immediately after graduation;” instead it is “50-50 with the graduates in terms of those who proceed for further studies and those who opt to seek out employment first for a period of time and then engage in their own business” (Geoffrey Karanja et. al., Group Interview, 17 March 2020). The fashion designers need to either participate in more
than one formal learning path or pursue an informal learning path in order to accumulate a sufficient level of technological capabilities needed to enter the local market. Then, the fashion designers must continue their education in order to be competitive in the local market.

The fashion designers that participate in more than one formal learning path must possess the financial resources to do so. Higher education is expensive with tuition, student ID, registration, material costs, examination costs, accommodation, and more. This is regardless of whether the higher education is private or public. For example, Evelyn College of Fashion Design is 95,000 KSH (circa 864.42 USD) per term with three terms, or 285,000 KSH (circa 2,593.27 USD) per academic year. There are no academic or merit scholarships (Geoffrey Karanja et. al., Group Interview, 17 March 2020). Meanwhile, the School of Art and Design at the University of Nairobi is 100,000 KSH (circa 909.92 USD) a term with two terms, or 200,000 KSH (circa 1,819.84 USD) an academic year. That price decreases to 26,500 KSH (circa 241.13 USD) per term, or 53,000 KSH (circa 482.26 USD) an academic year, for the government-sponsored students (Mercy, Interview, 18 March 2020). Peter Awino is the Secretary for the AKT. He explains that the fashion designers are the “people who can manage to go to the university to learn for fashion and design, they have money,” and “when they come out from the school, they do not need to do this work, but they need to put a setup of tailoring, and then they look for tailors to come and work for them under their supervision” (Tobias Oswagoo, Peter Awino, Group Interview, 9 March 2020). In the same fashion, the alternative formal learning activities are expensive (Mettā, 2020), or unpaid (Beatrice, Interview, 2 March 2020). For example, Mettā Nairobi is a membership-based innovation hub that costs 4,500 KSH (circa 39.68 USD) a month. This fee is a barrier to the entrepreneurs with limited access to resources. That means that most of the fashion designers possess the financial resources to access formal education opportunities.

This is not a new argument. Sandra Chege is the Arts and Communication Manager at the British Council Kenya. She shares, “The conversation about tailors and fashion designers became reftamed for me as potentially a class question, an education
question, an exposure question” (Sandra Chege, Interview, 9 April 2020). Dr. Osawa Otta is the Deputy Director at Research TVETA. He concurs that higher education at the degree or diploma level is a signal of status rather than skills. He explains that “most of the students who have been graduating from the university and coming back to our TVET institutions, they normally say that the qualifications that they get at TVET are the ones which normally give them the ability to get jobs. But most of them still like to go for the higher qualifications. Just for prestige” (Osawa Otta, Interview, 26 March 2020). This prestige is for the global textile and apparel value chain.

Thus, an alternative approach to the conversation on tailors and fashion designers is to consider the connection between the accumulation of technological capabilities and socio-economic status. Tailoring is considered a commonplace profession for “the low-level people” or “school dropouts” (Osawa Otta, Interview, 26 March 2020; Tobias Oswagoo, Peter Awino, Group Interview, 9 March 2020). Most of the tailors come from low socio-economic backgrounds with limited access to resources, such as institutional sources of finance. These entrepreneurs accumulate technological capabilities in order to support and sustain themselves. The tailors make use of the local market as a means to survive. For instance, Veronica is the Owner of White Rose Fashions. She did not finish secondary school because her father died, and her mother needed her to help sell vegetables on the side of the road. She used some of that income to attend Nyaore Polytechnic/Kisauni Polytechnic part-time: “I used to plant my collard greens, my onions, and then sell, and then go in the afternoon to the college. I can go in the morning and in the evening I come by, in the evening hours, I go to the garden, I plant my own things, and then I sell. Yeah, I sell the vegetables and then pay for my school fees” (Veronica, Interview, 11 October 2019). She graduated from Nyaore Polytechnic/Kisauni Polytechnic with a Certificate in Tailoring and Dressmaking, and soon after received a full scholarship to attend MTTI for a Diploma in Fashion Design. After MTTI, Veronica worked for another tailor to accumulate the practical skills in production. She entered the local market as a fundi, and taught students on the side to subsidize her enterprise. Five years later, she saved 50,000 KSH (circa 439.95 USD) to rent a stall. She explains that tailoring “is how people survive in Africa, especially in Kenya” (Veronica, Interview, 11 October 2019). In a later interview, she elaborates, “I
am just surviving. As long as you get something that you pay for the rent and eat” (Veronica, Interview, 4 November 2019).

In a similar manner, Mary is the Owner of Sasha Designs Closet, and an Instructor at Delight Tailoring and Fashion Design School. She graduated from the Ramogi Institute of Advance Technology (RIAT) in Kisumu with a Diploma in Fashion Design and Clothing Technology. After graduation, she applied for the position at the school because she “needed the cash” (Mary, Interview, 18 February 2020). She started her enterprise on the side. She discloses, “I did not have the funds. The owner of the school, has the funds, but does not have the knowledge to. So, we must come together to make something. But once I invest enough, I am planning to start my own [school]” (ibid.). She explains that tailoring is on the rise because “In Kenya, we are having a problem with unemployment. So, I think people have to come to realize that when you have a skill, it is easier for you to survive in Kenya, then waiting for you to be employed; you will wait forever” (Mary, Interview, 6 February 2020). Mary is able to use the income from the school to subsidize her enterprise. In that sense, tailoring is an opportunity to survive, and perhaps even thrive in the future.

Fashion designing, on the other hand, is considered a high-end career in the fashion world. Most of the fashion designers come from high socio-economic backgrounds with greater access to resources, such as capital and contacts. These entrepreneurs accumulate technological capabilities in the pursuit to participate in the global textile and apparel value chain. The fashion designers look at the local market as a stepping-stone. For example, Wandia Gichuru is the Co-Founder and CEO of VIVO. She graduated from the University of Western Ontario in Canada with a Bachelor of Arts in Economics, University of Cape Town in South Africa with an MBA, and the Stanford Graduate School of Business in the USA with a Certificate in Executive Education. She worked in the development sector for 10 years, such as a Policy Adviser with the United Nations Development Program (UNDP) and a Governance Advisor with the UK’s Department for International Development (DFID). In 2011, Gichuru used her personal savings and raised money from shareholders to start VIVO. She shares that at the moment, “I have been trying to think of what is uniquely East African that might have an appeal even to
foreigners coming, tourists, people, might have an export market” (Wandia Gichuru, Interview, 24 February 2020). She explains, “we are constantly trying to see how we can, like we started making a few things that have a little touch of African print, just because, especially if we are looking to export our very basic stuff, how different is it than what you can get at H&M or Zara?” (ibid.).

Likewise, Ria Ana Sejpal is the Founder and Director of Lilabare. She graduated from the University of Bath in the UK with a Bachelor of Science in Commerce, and the London College of Fashion, University of the Arts London in the UK with a Diploma in Fashion Design. After graduation, she worked as an Assistant Designer in India, and participated in the ITC SheTrades Initiative in Kenya. In 2017, Sejpal received 2,500 USD (circa 284,125 KSH) from her mother to start the business, and 10,000 USD (circa 1,136,500 KSH) in additional financial support. She explains that even in the short timeframe, “We sell worldwide. I started this off highly experimental in terms of, I was not going to box myself in too much in who I was targeting exactly because I know who my customer is as a person, but where she resides or he resides, I was not so sure” (Ria Ana Sejpal, Interview, 21 April 2020). She adds:

I am getting loads of orders from Kenya, sure, but I am also getting a lot of orders from New York, and the States, mostly New York, and I think there is a pocket of American customers that really appreciate what it is that we do for some reason…So, other than Kenya, the USA is definitely on my radar, and I also feel like there are some people in the UK and some people in the Netherlands, Germany, so places in Europe. (ibid.).

Sejpal has organized pop-ups in Nairobi, and participated in showrooms at London Fashion Week and Paris Fashion Week. In that sense, fashion designing is an avenue to access and participate in the global textile and apparel value chain.

That does not mean that the tailors are reluctant to participate in the global market, or that the fashion designers do not want to enter and be competitive in the local market, but rather that their reasons to accumulate technological capabilities do not align. The tailors perceive the technological capabilities that adhere to the standards of the local market as of utmost importance. This is because the tailors have limited access to
resources, and therefore participation in the local market is a necessity. The fashion designers consider the technological capabilities that adhere to the standards of the global textile and apparel value chain of the essence. This is because the fashion designers have access to resources, and therefore participation in the local market is a stepping-stone. These variations to the accumulation process stem from the socio-economic status of the entrepreneurs.

Stylists

All of the stylists achieve an intermediate level of technological capabilities in market research, project management, sourcing inputs, production management, production quality control, logistics, trouble-shooting, product development, logistics and distribution, fulfilling orders, branding and marking, consumer standards, and consumer relations, but lack the technological capabilities in sourcing time, equipment, equipment management, production in pieces, and product design. Their accumulation of technological capabilities is extreme on either side with little in the middle.

The stylists accumulate the technological capabilities needed to enter and be competitive in the local market via formal learning activities. Unlike the fashion designers, however, the stylists do not have to concentrate on the technological capabilities in production, such as production in pieces. Their role in the local market requires technological capabilities in investment and linkages, such as market research, and marketing and branding.

For instance, Connie Aluoch is the Founder of Connie Aluoch Styling Management. She shares that her “work is to make the end products look sexy and help them sell” (Connie Aluoch, Interview, 7 October 2020). She is responsible for “photo shoots, corporate photo shoots, makeover shoots, and one-on-one image consultancy to help people find their style;” she promotes the products “as an influencer on social media” (ibid.). In order to enter and be competitive in the local market, she is an active participant in formal learning activities, such as AfDB Fashionomics Africa Masterclass and ITC Ethical Fashion Initiative Accelerator Program for African Fashion Brands. In addition, she received a Diploma in Fashion Design and Garment Making from Evelyn College of Design, a Bachelor of Fine Arts in Fashion/Apparel Design from the Fashion Institute of
Technology, and a Master of Arts in Fashion Styling from Istituto Marangoni in Milan (LinkedIn, 2022).

Aluoch participates in more than one formal learning path in order to enter and be competitive in the local market. She has accumulated an intermediate level of technological capabilities in investment, innovation, and linkages. She does not need more than a basic level of technological capabilities in production. The stylists participate in formal learning activities in order to enter and be competitive in the local market. Their role in the local market requires a different set of technological capabilities than the tailors and the fashion designers.

**Conclusion**

The objective of the chapter was to evaluate all of the activities that the entrepreneurs participate in as a means to accumulate technological capabilities. These technological capabilities are essential to enter and be competitive in the local market. With the technological capability matrix, I looked at all of the learning activities: formal and informal. I did not dismiss or diminish the importance of informal learning. This is important as the accumulation of technological capabilities takes place in both casual and conventional arrangements. Then, I explained the extent to which the entrepreneurs enhance their knowledge and expand their skill set, such as pursuing a combination of learning activities. All of the entrepreneurs search for opportunities to achieve a higher level of technological capabilities over an extended period of time. This is because the baseline of technological capabilities is enough to enter the local market, but it is not enough to remain competitive. The technological capability matrix is a valuable tool to understand all of the activities that the entrepreneurs undertake in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

In the technological capability matrix, I contend that almost all of the tailors participate in informal learning activities in order to accumulate the technological capabilities needed to enter the local market. In contrast to the literature (Apunda et. al., 2017), I assert that the informal learning activities allow the tailors to accumulate the technical knowledge and skills of the trade. This is because the informal learning activities prioritize the
technical capabilities over the administrative and managerial capabilities. Practical application is a prerequisite to enter the local market.

Then, all of the tailors pursue a combination of formal and informal learning activities in order to be competitive in the local market. This is because the level of technological capabilities achieved to enter the local market is not sufficient to be competitive over a period of time. The level of technological capabilities is not sustainable. This is especially true for the technological capabilities in innovation. The product design and development process is constantly changing over time. The tailors need to continue to accumulate technological capabilities in order to remain relevant in the local market.

On the other side of the coin, all of the fashion designers prioritize participating in formal learning activities in order to accumulate the technological capabilities needed to enter the local market. The formal learning activities allow the entrepreneurs to grasp the theoretical foundation of the trade. However, unlike the informal learning activities, the formal learning activities are not enough – at least most of the time – for the entrepreneurs to accumulate a basic level of technological capabilities needed to enter the market. This is because the formal learning activities push the administrative and managerial capabilities over the technical capabilities. Thus, the entrepreneurs do not accumulate a basic level of technological capabilities in production. The formal learning activities do not provide the skills demanded in the local market, resulting in a skills mismatch. Therefore, the fashion designers participate in additional formal learning activities or undertake informal learning activities in order to enter and be competitive in the local market. In the context of the local market, formal learning is a supplement rather than a substitute to informal learning.

The stylists stand out from the tailors and the fashion designers in the learning activities. The entrepreneurs participate in formal learning activities in order to accumulate the technological capabilities needed to enter and be competitive in the local market. In particular, the entrepreneurs pursue the formal learning activities that allow them to accumulate the technological capabilities in investment and linkages. This is because their role in the local market is “the commercial part” (Connie Aluoch, Interview, 7 October 2020). The stylists do not need to accumulate the technological capabilities in
production, such as equipment management and production in pieces. Thus, formal learning is sufficient in order to enter and be competitive in the local market.

With the exception of the formal learning programs, such as accelerators, incubators, and masterclasses, all of the formal and informal learning activities emerge from the local market. That means that the entrepreneurs make use of the local market in conjunction with the global market in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The entrepreneurs seek out formal and informal local sources of support that provide practical and theoretical training, such as apprenticeships, internships, and TVET institutions. Therefore, while the emphasis of the thesis is on exploring the ways in which the entrepreneurs engage with the global textile and apparel value chain, I cannot discount the role of the local market in the process of accumulation of technological capabilities.

Last but not least, it is important to point out that none of the activities allow the entrepreneurs to accumulate the technological capabilities in logistics operations – at least not in a direct manner. The entrepreneurs accumulate the technological capabilities in logistics operations via observation and trial-and-error. For example, a tailor observes his or her employer interact with a supplier. Or a fashion designer learns from a previous mistake in a purchase agreement. This form of learning is an extended process that enables the entrepreneurs to accumulate technological capabilities over a period of time. While the chapter covers all of the common activities that the entrepreneurs assume as a means to accumulate the technological capabilities essential to enter and be competitive in the local market, there is not a single avenue to learning. This is important to keep in mind.

With the technological capability matrix, I am able to paint a picture of learning in the local market. I contend that the entrepreneurs that participate in informal learning activities accumulate a more advanced level of technological capabilities. The entrepreneurs who participate in informal learning activities acquire the practical skills required to enter the local market right off the bat. This is because these activities adhere to the standards of the local market. Whereas the entrepreneurs that undertake formal learning activities may or may not be able to enter the local market. The
entrepreneurs who participate in formal learning activities do not acquire the practical skills required to enter the local market and as a result need to participate in additional formal or informal learning activities. This is because these activities do not provide the skills demanded in the local market, resulting in a skills mismatch. Formal learning is a supplement to informal learning, allowing the entrepreneurs to build on the basis of their technological capabilities.
Chapter 7: Influence of Location in the Level of Technological Capabilities

Introduction

The aim of the chapter is to assess the impact of location on the process of accumulation of technological capabilities of the entrepreneurs in the local market. For the purpose of the research project, location is an area or space in which the entrepreneurs are able to accomplish at least one stage of the production system, such as the production of apparel or the sale of the end product. Location is not confined to a physical or singular space. For instance, a tailor is able to sew together a t-shirt at home, and sell that t-shirt at the marketplace. Or a fashion designer is able to design a dress at a workshop, and sell that dress online via WhatsApp. This is important to keep in mind because most of the entrepreneurs work in and across more than one location.

I turn to the technological capability matrix to characterize 11 of the most common locations in the local market: home, street, marketplace, stall, shop, store, office, workshop, warehouse, other enterprises, and online. I show the extent to which the locations provide opportunities for the entrepreneurs to enhance their knowledge or expand their skill set. For example, a custom tailor who works at a stall is able to accumulate an intermediate level of technological capabilities in project preparation, project management, and production in pieces. This is because the location is inclusive of all utilities. The entrepreneur is able to use an electric sewing machine without the financial burden of electricity expenses. I contend that all of the locations present opportunities for the entrepreneurs to achieve a higher level of technological capabilities.

Nevertheless, not all of the entrepreneurs are able to access all of the locations in the local market, and not all of the locations present the same opportunities to accumulate technological capabilities. For example, a store in the mall presents more opportunities to accumulate technological capabilities in branding and marketing compared to on the side of the road because the location is more permanent and stable. The matrix is a perfect tool to explain the extent to which the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.
Critical Engagement with the Literature on Location and Technological Capabilities

There is a considerable amount of literature on the correlation between location and level of technological capabilities (Whitfield, Staritz, 2018; Alcácer, 2006; Chung, Alcácer, 2002; Porter, Stern, 2001; Kabecha, 1999). One strand of the literature claims that enterprises select a location based on the avenues available to accumulate a higher level of technological capabilities (Alcácer, 2006). This strand of literature seeks to explain the location decisions of enterprises (Chung, Alcácer, 2002). For example, an enterprise relocates part of the production activities to a state with preferential trade agreements in order to accumulate a higher level of technological capabilities in logistics operations and linkages. The other strand of the literature contends that the location impacts the level of technological capabilities of enterprises (Porter, Stern, 2001). This strand of literature aims to measure the influence of the location on the process of accumulation of technological capabilities (Serbaya, 2017, p. 21). For example, an EPZ enterprise provides opportunities for an entrepreneur to accumulate a higher level of technological capabilities in production in pieces. The literature is not at odds with each other, or mutually exclusive, but rather the strands work on opposite ends of the equation to explain the correlation between location and level of technological capabilities. For the purpose of the research project, I look at the recent contributions to the literature in regard to location and level of technological capabilities.

A substantial strand of the literature is concerned with the extent to which enterprises, especially multinational enterprises, select a location based on the avenues available to accumulate a higher level of technological capabilities (Kim, Choi, 2020; Chung, Alcácer, 2002). For example, Seunghyun Kim and Byungchul Choi evaluate the determinants of FDI to developing countries. The authors explain that multinational enterprises “deploy their investments [FDI] to access the assets” of developing countries (Kim, Choi, 2020, p. 4). Location is a “primary motive for investors to allocate their resources to other countries” because the “investing firms expect value-adding activities,” such as the incorporation of natural or new resources (ibid., pp. 1-2). However, the location decisions of the multinational enterprises depend on the technological capabilities of the host country, which set “the rules of the game” (ibid., p.
Kim and Choi conclude that there is a “curvilinear relationship (U-shaped) between inward FDI and the technological capabilities of a host country” (ibid., p. 13). A multinational enterprise is more inclined to invest in a country with a basic level or an advanced level of technological capabilities compared to a country with an intermediate level of technological capabilities. This is because a basic level of technological capabilities means less competition with the local market, whereas an advanced level of technological capabilities means more “specialized in technology import…and export” in terms of “having technologies for securing and utilizing resources and technologies for production for off-shoring activities” (ibid.).

Likewise, Wilber Chung and Juan Alcácer contemplate the correlation between FDI location decisions and technological capabilities accumulation. The scholars comment that the enterprises “expand abroad in search of capabilities that are not available in their home markets,” especially technical capabilities, and “invest abroad to internalize existing capabilities” (Chung, Alcácer, 2002, pp. 1534, 1553). This expansion and investment more often than not takes the form of FDI. The scholars continue that the pace of development and incorporation of technology is different in each location “because technology depends on location-specific factors, such as innovations previously established, the education system, and the linkages between educational institutions and firms” (ibid., p. 1536). In order to access the local knowledge, physical proximity is required “because some knowledge is partially tactic and transfer requires frequent interaction” (ibid.). Chung and Alcácer contend that locations with “greater market size, lower factor costs, and better access to surrounding states attract more FDI” due to the potential to acquire technological capabilities and develop new products and processes (ibid., p. 1551).

Lindsay Whitfield and Cornelia Staritz examine the location decisions of the Mauritian enterprises in the Madagascan apparel export market. The authors explain that the enterprises retain "a headquarters in Mauritius focused on design and marketing, and factories concentrated on fast fashion products" and “use factories in Madagascar to sew long run, basic products using fabric produced in Mauritius” (Whitfield, Staritz, 2018, pp. 9-10). This is because of the low cost of fabric production in Mauritius, and
the low cost of unlimited (unskilled) labor in Madagascar. In addition, Madagascar is a member of AGOA, which provides the Mauritian enterprises with duty-free entry of apparel products to the USA. Despite the long lead times due to “transporting materials in and out of factories,” as well as “poor infrastructure and limited port facilities,” the Mauritian enterprises are able to be competitive in the Madagascan apparel export market (ibid., p. 10). Whitfield and Staritz show that the enterprises select Mauritius and Madagascar as locations in order to accumulate a higher level of technological capabilities.

Meanwhile, Juan Alcácer considers the “strategic value of location choices” in the global value chain (Alcácer, 2006, p. 1470). He looks at the activities performed in the same location in comparison to the activities performed in separate locations. He asserts that the assumption that “competition forces drive firms apart geographically, and agglomeration forces drive them together” is inaccurate because the “competition costs and agglomeration benefits have different impacts on collocation for production, research and development (R&D) and sales distribution” (ibid., p. 1457). The firm-specific technological capabilities moderate the impact of costs and agglomeration benefits. For example, a firm with an advanced level of technological capabilities is able to avoid competition in the global value chain (ibid., pp. 1457-1458). Alcácer continues that “production and sales subsidiaries are more geographically dispersed, and R&D subsidiaries are more concentrated” (ibid., p. 1470). The strategic value of location choices depends on the technological capabilities of the firms.

A sizable strand of the literature is interested in the opposite side of the spectrum: the impact of the location on the level of technological capabilities of enterprises (Serbaya, 2017; Porter, Stern, 2001, p. 29). For instance, Kenichi Kashiwagi and Erina Iwasaki examine “the effect of agglomeration on technical efficiency of small and medium-sized garment firms in Egypt” (Kashiwagi, Iwasaki, 2020, p. 14). The authors assert that agglomeration has a positive impact on technical efficiency. The idea is that “agglomeration enhances technical efficiency of firms through development of industrial linkages and accumulation of human capital” (ibid.). Agglomerated firms use more updated technology than non-agglomerated firms. This is attributed to the higher level of
capabilities in linkages. Kashiwagi and Iwasaki stress the need to promote agglomeration of firms in the global textile and apparel value chain in order to nurture forward and backward linkages. Forward linkages include “developing export contracts” in order to improve access to foreign markets; backward linkages include “subcontracting to secure a supply of inputs by mitigating risk and uncertainty of inputs in terms of quantity and quality” (ibid., p. 25). These linkages improve overall technical efficiency of firms, especially firms in developing countries.

In a similar manner, John Akoten and Keijiro Otsuka assess the merits of agglomeration in the technical performance of the textile and apparel enterprises in Kenya. The scholars comment that industrial clusters “play a significant role in the promotion and development of small enterprises” (Akoten, Otsuka, 2007, p. 564). This is because “industrial clusters enhance enterprise performance by reducing transaction costs in marketing through traders” (ibid.). For example, “well-educated and highly socially networked tailors who are capable of producing a certain product quality standard are likely to link up with traders to become mini-manufacturers over time” (ibid.). This agglomeration results in an “increased information flow regarding the quality of these producers and lower contracting costs via trust” (ibid., 590). Akoten and Otsuka suggest that the government should remove policies that “hinder firms from investing in efficient technologies,” such as the lack of access to formal finance and limited information flow (ibid., p. 591).

Meanwhile, Sanjaya Lall considers the influence of national technological capabilities on the firms in developing countries. He contends that there are “many roads to success,” and that the “differences in viable strategies are given by the ‘state of nature’ viz. size, resource, endowment, or location” (ibid., p. 182). Thus, smaller countries are not “handicapped by their size, but the sorts of industries they can set up and the technological options they can pursue differ from those for large countries” (ibid.). Lall continues that the development of national technological capabilities depends on the “strategic choices of policy makers” (ibid.). Thus, the policy makers determine the incentives (or disincentives), such as credit allocation for infrastructure and requirements for technical support, needed to promote the development of national
technological capabilities. He recommends that policy makers “intervene over time to create new skills, technologies, and institutions,” which in turn will enhance the national technological capabilities and enable competitive new activities (ibid.).

Wanjau wa Kabecha examines the impact of the informal sector on the level of technological capabilities of micro-enterprises in Kenya. He explains that “most micro-enterprises are sited on poor sites, with no room to expand” (Kabecha, 1999, p. 121). This is because the informal sector lacks “the space and infrastructure” (ibid.). This “inadequate space…may partly explain why the need to acquire machines may have not arisen” (ibid.). In addition, “the lack of electricity and water was found to impose a severe constraint on the level of technology that can be adopted by the manufacturers” (ibid.). The micro-enterprises that operate in the informal sector cannot accumulate a high level of technological capabilities in equipment or equipment management compared to the small and medium enterprises that operate in the formal sector. Kabecha stresses that the informal sector is a constraint to the development of technological capabilities.

The literature on the correlation between location and level of technological capabilities is not independent, or mutually exclusive, but rather two sides of the same coin. There is a concurrence that the entrepreneurs choose the location with the best chance to accumulate the technological capabilities needed to enter and be competitive in the local market. This is because location is a critical component in the level of technological capabilities. I do not dispute the impact of technological capabilities in the location decisions or the importance of location in the accumulation of technological capabilities. Instead, I seek to fill a gap in the literature.

Despite all of the literature on the correlation between location and the level of technological capabilities, there is little discussion that looks at the local market. This is because the scholarship is written from the vantage point of the global textile and apparel value chain. The scholars evaluate either the extent to which locations in developing countries attract FDI from locations in developed countries (Chung, Alcácer, 2002; Kim, Choi, 2001), or contribute to the export market (Whitfield, Staritz, 2018). Even those who look at local or national technological capabilities do so in comparison
to the international technological capabilities – or the technological capabilities of “developed countries” (Lall, 1992, p. 168). In addition, the literature on the correlation between location and the level of technological capabilities is engrossed with the extent to which location effects “access to external technical information and support” and “access to appropriate embodied technology in the form of capital goods, from the best available sources, domestic or foreign” (ibid., p. 169). The emphasis is on the technical dimension rather than the administrative or managerial dimensions (Kashiwagi, Iwasaki, 2020; Chung, Alcácer, 2002). As a result, the literature is unable to capture the impact of location on the level of technological capabilities in the local market.

For the purpose of the research project, I put the local market at the center of the analysis in order to provide a more comprehensive account of the impact of location on the process of accumulation of technological capabilities. I am interested in the extent to which the locations provide opportunities for the entrepreneurs to accumulate the technological capabilities needed to enter and be competitive in the local market. For example, a fashion designer works at home – a location that is the breeding ground for creativity. The entrepreneur is able to conceptualize and construct a design that is original. Hence, the fashion designer accumulates an intermediate level of technological capabilities in innovation. That said, I recognize that not all of the entrepreneurs are able to access all of the locations in the local market and not all locations provide the same opportunities. Therefore, I make use of the matrix to understand the extent to which the entrepreneurs make the most of their location in order to accumulate technological capabilities. Although not all of the entrepreneurs start off at the same point, the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.

**Locations in the Local Market**

All of the locations in the local market provide opportunities for the entrepreneurs to accumulate technological capabilities. The locations influence the level of technological capabilities that the entrepreneurs are able to achieve over a period of time. In Mombasa and Nairobi, there are a limitless number of locations that serve as the home
base for activities, such as production or retail operations. Table 15 is a short
description of the top 11 locations in the local market.

<table>
<thead>
<tr>
<th>Table 15: Locations in the Local Market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home</strong></td>
</tr>
<tr>
<td><strong>Street</strong></td>
</tr>
<tr>
<td><em><strong>The terms “street” and “road” are used interchangeably throughout the thesis, with no distinction in meaning.</strong></em></td>
</tr>
<tr>
<td><strong>Marketplace</strong></td>
</tr>
</tbody>
</table>
| Stall | A stall is a semi-permanent structure, such as a booth or stand. The stall is located in the marketplace or on the side of the road. An entrepreneur produces and/or sells merchandise at the stall. The rent is a little more expensive than a table at the marketplace, but more affordable than a shop. Thus, an entrepreneur is able to mediate the costs.

***A stall is sometimes referred to as a kiosk. |
<p>| Shop | A shop is a permanent retail establishment on the side of the road, or in a commercial building, such as Nairobi Textiles Center. An entrepreneur produces and/or sells the merchandise at the shop. Although a shop is more expensive in terms of rent and other overhead costs, the location is stable with semi-reliable foot traffic. |
| Store | A store is a permanent retail establishment, such as a fashion house. An entrepreneur sells but does not produce the merchandise at the store. The store is often located next to other retail establishments, such as in a mall or shopping center. This is one of the most expensive locations due to the rent and overhead costs, but also one of the most |</p>
<table>
<thead>
<tr>
<th>Location Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>An office is at least one room in a commercial structure. An entrepreneur rents the office space to produce and/or sell the merchandise. A proportion of the entrepreneurs rent the office space to meet with clients.</td>
</tr>
<tr>
<td>Workshop</td>
<td>A workshop is a small- to medium-sized structure in which products are manufactured or repaired. It can be a room, multiple rooms, or an entire structure. An entrepreneur owns or rents the workshop to produce the merchandise. An entrepreneur seldom sells the merchandise at the workshop.</td>
</tr>
<tr>
<td>Warehouse</td>
<td>A warehouse is an industrial building located on the outskirts of the city. An entrepreneur produces the merchandise at the warehouse. Although the rent is high, the option for expansion is there. At the warehouse, there is enough space to store stock.</td>
</tr>
</tbody>
</table>

***The Bombolulu Coast Workshop and Cultural Center is a notable exception. The workshop is a large structure located in Kisauni District of Mombasa. The space serves as a classroom, production site, and gift shop.***
### Other Enterprises

Other enterprises pertain to other business establishments in the local market, such as a fashion house or a TVET institution. The entrepreneurs use the equipment and/or materials at the other enterprises to produce the merchandise. This can be a high-risk operation because of the possibility of unemployment.

### Online

Online, or the world wide web, is an information system. The entrepreneurs sell the merchandise online, such as on a website or a social media platform (Facebook, Instagram, and WhatsApp). These commercial transactions conducted on the internet reduce overhead and operational costs.

The entrepreneurs in the local market commence production and retail operations out of at least one of these locations, but most of the entrepreneurs work out of at least two. For example, a custom fashion designer sews the merchandise out of his or her garage, and then sells the end product at a store in the mall.

Each of the locations in the local market is an outcome of the social production and construction of space. The social production of space consists of the processes that create the tangible portions of the city-space, such as buildings or streets; meanwhile the social construction of space refers to the human behavior that “transforms” a space into a place through the every-day actions of individuals (Creekmore III, 2014, p. 33). Each of the locations is not static or complete, but rather in motion, changing over time through dynamic human activities (Soja, 2000). Therefore, I draw attention to those
dynamic activities that occur in each of the locations in order to determine the extent to which the locations impact the level of technological capabilities of the entrepreneurs, and the ways in which the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.

Tailors

*Machine Operators*

Most of the machine operators undertake additional work outside of their primary place of employment with the textile and apparel manufacturers. The entrepreneurs produce the merchandise at home and/or on the side of the street. This side hustle happens after normal business hours, such as in the evenings or on the weekends. The limited hours of operation is a hindrance to the entrepreneurs that seek to accumulate administrative, managerial, or technical skills of the trade. There are only so many hours in the day. For example, the entrepreneurs do not have the time to deliberate over storing and packing stock of the same product, or invest in the promotion of a good or service. Thus, the entrepreneurs achieve a low- to high-basic level of technological capabilities in investment, production, and innovation, with the exception of production in pieces. The entrepreneurs depend on the basic level or technological capabilities to enter and be at least semi-competitive in the local market. It is a sideline operation. Meanwhile, the entrepreneurs accumulate an advanced level of technological capabilities in production in pieces because of their primary place of employment at the textile and apparel manufacturers. The entrepreneurs practice putting together the pieces of an outfit on a regular basis to build on their production skills.

The machine operators sell the merchandise in one of the three spaces: at home, on the side of the street, and/or on social media. The most popular place is online because the location offers low operational costs, such as no permits or rent. The trade-in for the low costs is that the entrepreneurs achieve a basic to high-basic level of technological capabilities in logistics operations and linkages. Since the location is remote, the entrepreneurs depend on word-of-mouth to sell the merchandise, such as from
relatives. The entrepreneurs do not build consumer relationships based on face-to-face interactions.

For example, Elizabeth is a machine operator at an EPZ enterprise in Mombasa. She undertakes additional work as a custom tailor and a retailer of second-hand bedsheets. She learned how to sew in home science in upper primary and junior secondary. She calls stitching “my hobby, it is a stress reliever. I stitch on the side” (Elizabeth, Interview, 31 October 2019). She states, “I do a bit of stitching, and apart from stitching, I sell bedsheets” (ibid.). Elizabeth stitches individual pieces at home, and sells all of the products on Facebook, including the second-hand bedsheets. She does decorations and repairs “for friends only – not commercial” (ibid.). Since the operation is a sideline, there is no obligation to accumulate a higher level of technological capabilities. Elizabeth contends that all she needs to know is “the confidence in holding the scissors, cutting a dress” and so forth (ibid.).

A small percentage of the machine operators start their enterprise out of other enterprises, such as export-oriented enterprises or textile and apparel manufacturing enterprises. The machine operators make use of the equipment and misuse the materials to produce and sell the merchandise in the local market. For instance, a machine operator steals thread in order to sew a t-shirt at home and sell that t-shirt at the marketplace, or a machine operator manufactures more than the quota allocated to them and steals the extra to sell on the side of the street. Thus, the entrepreneurs base their operations in multiple locations.

One reason that the machine operators start their schemes out of their main place of employment rather than on the side of the street is attributable to the access of resources. Most of the textile and apparel manufacturers accumulate an advanced level of technological capabilities in sourcing inputs and equipment. For instance, Alpha Knits Ltd. is a textile and apparel manufacturer that specializes in the production of embroidery work, knit wear, and woven fabrics. The enterprise imports all of the materials from India, Indonesia, and the Philippines and the machines from China, Germany, and Italy. This includes more than 150 sock machines, 40 knitting and dyeing machines, and 100 sewing machines (Madhu Shah, Sagar Shah, Group Interview, 13
March 2020). Therefore, the machine operators who operate out these enterprises are able to accumulate at least an intermediate level of technological capabilities in investment (e.g., sourcing inputs, sourcing time, and equipment) compared to the machine operators who work at home, on the side of the street, or online.

This is a high-risk endeavor that exposes the machine operators to unemployment. For example, Madhu Shah is the Co-Founder and Managing Director of Alpha Knits Ltd., and Sagar Shah is the Manager. Madhu shares that, “We caught people with socks, we caught people with sweaters, we caught people with buttons, we caught people with threads” (Madhu Shah, Sagar Shah, Group Interview, 13 March 2020). Sagar adds that one of the security guards caught a machine operator with “5 pairs of socks in his shoes, and his foot still fit in” (ibid.). Madhu and Shah have to be “very careful” because “pilferage is there” (ibid.).

Due to the high-risk, most of the machine operators do not operate their enterprise out of their place of work. Instead, the machine operators perceive the textile and apparel manufacturing enterprises as a learning avenue, especially the EPZs, and undertake all of the activities at home, on the side of the street, and/or on social media.

*Fundis*

Almost all of the fundis work on the side of the street and/or at the marketplace. These areas are similar with high pedestrian traffic and low start-up and operational costs between 30 to 50 KSH (circa .27 to .45 USD) per day, depending on the proximity to the city center. This presents a lot of potential opportunities for the entrepreneurs to participate in retail operations without the financial commitments (James Kinara, Interview, 2 October 2019). The entrepreneurs receive orders for alterations or repairs, such as an adjustment to the hem of a t-shirt or a repair of a button on a sweater (Idris, Interview, 12 October 2019). This requires a basic level of technological capabilities in production.

For the most part, the fundis who work on the side of the street or at the marketplace come across opportunities to accumulate technological capabilities in production, such as production in pieces, logistics, and trouble-shooting, but lack the opportunities to
accumulate technological capabilities in investment, innovation, and linkages, such as sourcing inputs, product design, and consumer standards. One explanation is because the entrepreneurs do not have a permanent place of business in the local market. For example, Veronica used to be a fundi on Tom Mboya Road in Tudor, Mombasa. She shares, “I used to carry my machine from all the way down [from Kisauni], and I come with it here [Tudor], every day. And then take it back. When I cannot carry, I have to look for somebody, to give him money, so he can carry it for me. Then, take it back again” (Veronica, Interview, 11 October 2019). She would wake up at the crack of dawn and carry her sewing machine more than 2.9 miles (4.6 kilometers), or take a matatu (minibus). The matatu is a minibus transportation system that charges an additional fee for possessions, including a sewing machine. Thus, Veronica was able to achieve a higher level of technological capabilities in logistics, trouble-shooting, and logistics operations. She had no alternative but to work out how to transport her sewing machine back and forth. That said, Veronica did not always secure the same spot on the side of the street and did not always arrive at the same time. Her business hours were inconsistent. This lack of consistency resulted in more basic orders, such as alterations and repairs. She was not given the chance to produce her own work. Veronica was unable to accumulate a higher level of technological capabilities in product design and consumer standards.

The unpredictable or unstable business behavior contributes to the perception that fundis – in a general sense – are unreliable. For instance, Priscilla is a custom tailor in Mombasa. She shares that, “You can take something to a fundi and the end results are basic, and some are not keeping up to their word. Some can tell you to come tomorrow. When you go there, it is not yet done. Come tomorrow” (Priscilla, Interview, 18 October 2019). It is almost impossible for the fundis to accumulate more than a low to intermediate level of technological capabilities in linkages, especially in consumer standards and consumer relations.

Another explanation is because the fundis work shoulder-to-shoulder with the second-hand clothing retailers. The retailers sell the second-hand clothes on the side of the street and/or at the marketplace, such as Kongowea Market in Mombasa, and Gikomba
Market and Toi Market in Nairobi. The retailers attract most of the foot traffic. Thus, it is no surprise that the fundis receive more orders to alter or repair second-hand merchandise than to manufacture new merchandise. For example, Idris is a fundi on Mwembe Tayari Street in Mombasa. He explains, “Those main customers are going to buy *mitumba*, they will come to us. They give us repairs. But only repairs” (Idris, Interview, 12 October 2019). The consumers purchase the second-hand clothes on the side of the street and/or the marketplace, and then ask the fundis to alter or repair the merchandise in order to meet their needs, such as an adjustment in size or a repair of a hole.

Raphael Abdulmajid Ighombo is the Head of the Education Department at the National Museums of Kenya and the Swahili Cultural Center. He contends that most consumers look for the fundis on the side of the road and/or the marketplace. He continues that there are fundis “everywhere,” who offer low prices: “They [the fundis] charge very little. Because most of the people who get *mitumba* from Kongowea, maybe they do not fit properly or they want a change, they find that they could charge 50 shillings [circa .45 USD]. Or they could charge less than 100 shillings [circa .91 USD]. It is nothing” (Raphael Abdulmajid Ighombo, Interview, 30 September 2019).

The second-hand clothing market is a blessing and a curse to these entrepreneurs. On one hand, the market provides opportunities for the fundis to accumulate at least an intermediate to high-intermediate level of technological capabilities in innovation (e.g., product development). The entrepreneurs are able to improve or reconceptualize a product at minimal costs. On the other hand, the market obstructs opportunities for the fundis to accumulate more than a basic level of technological capabilities in investment (e.g., sourcing inputs and sourcing time) and innovation (e.g., product design). The entrepreneurs do not need to source the materials or create a new product because the consumers bring the merchandise to them to be customized.

That does not mean that all of the marketplaces sell second-hand merchandise. For example, the retailers at Biashara Street and Marikiti in Mombasa, and the Maasai Market in Nairobi sell local accessories and cloth, such as *kanga* and *kitenge*. Valentine is the Instructor at Cathedral Fashion and Design School at the Holy Ghost Cathedral.
She explains that she has instructed “so many fundis at Marikiti” (Valentine, Interview, 15 October 2019). That said, the same rule applies. The fundis do not have a reason to purchase the materials for production. This in turn restricts their avenues to accumulate a higher level of technological capabilities in investment and innovation.

The small percentage of fundis that secure orders for custom-made pieces tend to produce at home. Most of the fundis own an electric sewing machine at home, but transport a manual sewing machine back and forth (Veronica, Interview, 11 October 2019). This is because the manual sewing machine does not require utilities, such as electrical power. That said, the electric sewing machine is much more convenient than the manual sewing machine. It is quicker and smoother with additional features, such as the lock stitch and zig-zag. The entrepreneurs are able to accumulate a higher level of technological capabilities in production quality control, fulfilling orders, and consumer standards with the electric sewing machine. Therefore, the fundis who receive orders for custom-made pieces tend to produce at home.

There are exceptions. Idris works on the street outside of a shoe shop, see Image 12. The owner of the shoe shop allows him to store his electrical sewing machine and the materials in the shop at night, and to use one of the electrical outlets for 4,500 KSH (circa 40.94 USD) per month (Idris, Interview, 12 October 2019). Idris shares that this is because “the owner of the shop, he has kids. One of the kids is my friend. We meet at video store. So, I asked him, I want to work outside your father’s shop because I can get electricity over there. He said, ‘Let me tell him, my dad.’ His dad agreed. He said, ‘I agree because you are friends’” (ibid.). Thus, Idris sews dresses on the side of the street rather than at home. Due to a personal connection, he is able to accumulate a higher level of technological capabilities in production quality control, logistics operations, and consumer standards because he does not have to wait until he is home to work on an order on his electric sewing machine.
For the most part, the custom and ready-to-wear tailors take on all of the activities at home, online, at the marketplace, at a stall or shop, store, and/or other enterprises. Most of the custom tailors perform the production and sales operations at a stall or shop, see Image 13. This is because the entrepreneurs prioritize the technical dimension of technological capabilities, such as production in pieces. These locations provide the entrepreneurs with enough space to store the machines and materials and produce the merchandise, and sell the end products to the local consumer. This space
permits the entrepreneurs to achieve at least an intermediate level of technological capabilities in all areas of production. In addition, these spaces are semi-permanent and stable. The entrepreneurs do not have to be concerned about relocation in the near future. This allows the entrepreneurs to achieve an intermediate level of technological capabilities in project preparation and production management. The entrepreneurs plan ahead in order to keep their enterprise competitive in the local market.

For example, Rosemary is a custom tailor and the sole proprietor of a micro-enterprise in Mombasa. She rents a small stall across the street from the matatu station for 6,000 KSH (circa 54.58 USD) per month and registers for the annual Single Business Permit for 7,000 KSH (circa 63.68 USD) (Rosemary, Interview, 19 October 2019). The rent is inclusive of utilities. This is important as one of her sewing machines is an industrial electric. She purchased the equipment from an EPZ enterprise (ibid.). Rosemary is able
to use that machine without the financial burden of electricity expenses. Thus, she is able to achieve at least an intermediate level of technological capabilities in project preparation, project management, and production in pieces. That said, Rosemary points out the limitations of the location. Her stall is not located next to or near a marketplace that sells African print. Therefore, she requires her clients to purchase and provide the materials. She shares, “With the new clothes, they give me the kitenge, they ask for the fashion. I have a fashion book there. So, they ask and then they look, they pick this one, and then I stitch” (ibid.). This means that she is unable to achieve more than a basic level of technological capabilities in sourcing inputs and sourcing time because she does not provide the materials. In a similar fashion, Rosemary is reliant on word-of-mouth to attract potential customers and promote the merchandise. She shares, “You get exposed with many people. If you do good work, they go, maybe somebody sees it, ‘Where did you stitch it? Ah! I stitch it in Tudor. Let me take you there.’ And then they come” (ibid.). This branding and marketing plan is unpredictable with little to no investment. It is almost impossible to accumulate more than a basic level of technological capabilities in linkages via word-of-mouth.

In a similar manner, Peter Awino is a custom tailor and the sole proprietor of a micro-enterprise in Nairobi: Kaf Kaf. He produces and sells his merchandise out of a stall in Nairobi Textiles Center – a structure with more than 600 retailers (Peter Awino et. al., Group Interview, 19 March 2020). The stall is affordable at 12,000 KSH (circa 109.16 USD) in rent per month and 5,000 KSH (circa 45.48 USD) for the Single Business Permit. The rent is inclusive of utilities. Awino explains that this is at his advantage: “Electricity is catered for. They cater for it. The advantage is you can even work 24/7 if you have a lot of work. You are working late. You can go home at 12” (ibid.). He adds, “Even, sometimes, I do overnight, depending on the work and what I want to touch up on. You want to do them on your own turf, so you need to create more time, work on them” (ibid.). He is able to invest time to accumulate a higher level of technological capabilities in production, such as production management and production in pieces, and logistics operations, such as fulfilling orders. He is able to work late in order to complete the order to the specifications of the consumer. That said, Awino points out that the location is two-sided. On one hand, Nairobi Textiles Center provides a medium
to high level of pedestrian traffic. He is able to accumulate at least an intermediate level of technological capabilities in linkages. There is not a shortage of consumers seeking out a custom tailor. On the other hand, Nairobi Textiles Center is competitive with more than 600 other retailers. It is a challenge to accumulate more than an intermediate level of technological capabilities in linkages. Despite the fact that Nairobi Textiles Center is open 24/7, he contends that he has a high ratio of missed sales opportunities.

For that reason, Awino wants “to go online” in order to accumulate a higher level of technological capabilities in logistics operations and linkages (ibid.). He asserts that social media will allow him to receive, process, and deliver orders in a more efficient and effective manner, and connect with other markets. That said, he cautions that

Online needs a lot of capital because you need to do 20 dresses, you do a photo shoot, you upload, then people will say ‘I want this. I want that. I want that.’ So, if you did one size, maybe this one is bigger, the other one is smaller. Now, they want the order in 2 days or 1 day. You do not have to cash to buy the fabric, the materials, you really are, you are in trouble. (ibid.).

The online platform is low in overhead and operational costs, but high in start-up costs. Awino is a custom tailor that makes personalized pieces rather than mass-produced products. He does not store stock. He believes that he needs to accumulate a higher level of technological capabilities in investment, in particular project preparation, before he can move online.

Meanwhile, most of the ready-to-wear tailors work at a store, such as a boutique or a fashion house. The location is the most expensive, but the most reliable. It is a permanent structure with consistent business hours and regular foot traffic. For instance, Morrice Oduor is a ready-to-wear tailor at the fashion house: Frederick Bittiner (Morrice Oduor, Marion Malika, Group Interview, 12 March 2020). Frederick Bittiner is located at the Ngong Road Professional Center next to Junction Mall in Nairobi. Oduor mass-produces the merchandise at the fashion house. He explains that the fashion house has the space to “mass-produce...ladies outfits, dresses, jackets, African dresses, and even men” (ibid.). He recently received an order for 100 jackets. Oduor
oversees the production of more than 300 pieces each day. In addition, there is space to store 13 new electrical sewing machines and employ 20 tailors (ibid.). The location allows him to accumulate an advanced level of technological capabilities in production, such as production management, equipment, and production in pieces.

In as much as the space permits for mass-production, Oduor cautions that it is a challenge to balance quality and quantity in the production operations. His aim is “to satisfy the customer. The client efficiency is very important. So, that is a very big challenge because if you cannot satisfy the customer or the client, she will not come back again. So, we have to make sure that our work is so perfect” (ibid.). That said, the “production of quality materials” is expensive. The quality versus quantity debate narrows the avenues to accumulate technological capabilities in production quality control.

The extra elbow room at the fashion house comes at a price. The rent is 100,000 KSH (circa 909.67 USD) per month. Oduor shares that he is constantly on the search for new clients. He sells the merchandise to “various boutiques, then we do supermarkets, we look at malls” (ibid.). Marion Malika is the Marking and Public Relations Specialist at Frederick Bittiner. She stresses that with the internet, “we do now have abroad networks and all that, we are able to reach a vast number of clients, so we are not only limited to people in Nairobi. We can actually get clients from Western Kenya, from Nyanza, do productions for them and then transport them easily” (Morrice Oduor, Marion Malika, Group Interview, 12 March 2020). Oduor invests time and resources to accumulate technological capabilities in branding and marketing, and consumer relations.

The custom and ready-to-wear tailors that cannot afford the start-up and overhead costs associated with a more permanent structure tend to assume the operational activities at home, at the marketplace, or a combination of locations. For example, Priscilla is a custom tailor in Mombasa. She runs all of the activities at home (Priscilla, Interview, 18 October 2019). This is because “I just graduated last year. I graduated last December, so I am still not stable enough to own a shop. I do plan to open a shop” (ibid.). Entering the local market from home requires less capital start-up and overhead than a shop or store. Priscilla does not need the Single Business Permit. She explains, “I work from
home, so I do not pay anything" (ibid.). She is able to concentrate on other technological capabilities, such as in investment and production. That said, Priscilla draws attention to the drawback of her location: “I do not have enough space. There are some machines that I do not have. I just have a normal one and I cannot do overlook, I cannot do embroidery, and all that. So, basically, the machines and space are the biggest challenges” (ibid.). Her location limits her ability to accumulate technological capabilities in equipment and equipment management, and order fulfillment. She is restricted in the number of orders that she is able to accept and process.

The combination of locations is common. These entrepreneurs produce at home or at a workshop, and then sell the end products at stall or table in the marketplace or online. This is because the stall or table at the marketplace is too small to run production operations. For instance, Rita Mueke is a custom tailor and second-hand clothes retailer. She produces all of the made-to-measure orders at home and provides retail services at her stall in the marketplace at Kiembeni Estate in Mombasa (Rita Mueke, Interview, 1 October 2019). Her iron sheet stall is small at no more than 6.6 X 6.6 feet (2 X 2 meters) compared to the concrete stalls that are almost double the size. It is more affordable in rent though at 2,000 KSH (circa 18.19 USD) per month compared to 8,000 KSH (circa 72.77 USD) (ibid.). Despite the size, she is able to perform a basic level of technological capabilities in production at the marketplace. She continues that, “if there are repairs, I can do some repairs. Repairs of the same clothing that I am selling, or repairs from people who are coming in with their clothes to be repaired. So, basically, I will get some money out of it. Rather than just sitting there, waiting” (ibid.). Rita is able to perfect the basic skill set in production at the stall and then build on that skill set at home. In addition, since the stall is a semi-permanent structure, Rita is able to conduct all of the commercial transactions with “the same customers” (ibid.). The customers know where her stall is in the marketplace. She is able to build a client base and accumulate an intermediate level of technological capabilities in linkages.

Last but not least, the custom and ready-to-wear tailors with extremely limited resources or other financial responsibilities tend to produce and sell the merchandise at other enterprises. These other locations provide perks that allow the entrepreneurs to enter
and be competitive in the local market. For example, Mary is the custom tailor and sole proprietor of a micro-enterprise: Sasha Designs Closet. In addition, she is an Instructor at Delight Tailoring and Fashion Design School. She manufactures almost all of the orders at the school and sells the products on social media (Mary, Interview, 6 February 2020). Mary explains that Delight Tailoring and Fashion Design School is the perfect location to oversee production operations due to modern equipment and no overhead costs. All of the sewing machines use “electrical power” (ibid.). Plus, there is more than one type of electrical sewing machine, such as an overlock and an embroidery machine. Therefore, she is able to add specialized stitches at little to no cost. She continues, “I have my own machine here and also at home. And when I am busy here, I do some at home” (Mary, Interview, 18 February 2020). Mary is able to perform specialized stitches at the school and complete the product at home, if needed. This allows her to accumulate at least an intermediate level of technological capabilities in equipment, equipment management, and production in pieces, and an intermediate level of technological capabilities in consumer standards. She is able to stitch smooth and straight lines in less time with an electrical machine than a manual one.

Then, Mary advertises the merchandise on social media, such as Facebook, Instagram, and WhatsApp. She contends that she captivates customers “through social media. Mostly on Facebook. I am also on Instagram, but I do not get most of my clients from there. I get them from Facebook” (Mary, Interview, 18 February 2020). In addition, she relies on word-of-mouth. She notes, “Even, most people recommend others to me. So, most of my clients are just recommended by the ones that I have done their work” (ibid.). However, Mary is in competition with the other tailors on social media. She receives about 8 orders a month at 4,000 to 5,000 KSH (circa 36.39 to 45.28 USD) per piece, or 32,000 to 40,000 KSH (circa 291.09 to 362.87 USD) total (ibid.). Although she saves on the overhead costs, such as rent at 10,000 KSH (circa 90.97 USD) per month, it is difficult to build a client base. The sole reliance on social media and word-of-mouth is a setback in the accumulation of technological capabilities in linkages.

In a similar fashion, Sister Faustina is a custom and ready-to-wear tailor at Star of the Sea in Mombasa. She produces and sells the merchandise to churches, such as a habit
for the nuns or a vestment for the priests. Sister Faustina produces the merchandise at Star of the Sea, but sells the merchandise at St. Joseph Church. She shares that Star of the Sea “is advertised as a school…it is not advertised as a tailoring shop” (Faustina, Interview, 25 September 2021). Thus, she does not have to pay the Single Business Permit at 5,000 KSH (circa 45.48 USD) or more per annum. Sister Faustina reallocates these resources to investment-related activities. For example, she purchases the materials in Uganda because “there is a material and the textiles normally do not get it here in Mombasa” (ibid.). The redirection of the resources allows her to achieve a higher level of technological capabilities in sourcing inputs and sourcing time. Sister Faustina adds that the main challenge is the manual sewing machines: “The machines are these local ones, so they take a long time. I wish we had these modern machines, but now, to get them, they are expensive. So, normally we use the manual machines, the local machines” (ibid.). She is dependent on the outdated equipment due to her production operations at St. Joseph Church. This is an obstacle in the pursuit to achieve a more advanced level of technological capabilities in equipment and equipment management.

Sister Faustian is not alone. A lot of the tailors do not register their enterprise at the start. Susan is the Regional Coordinator of the KAM. She asserts that it is a “mistake” for any start-up enterprise in the local market to register with the Registrar of Companies. Her advice for MSMEs is:

Do not go register your company at first. It might kind of look like illegal, but do not go register. Because, you will go register, maybe it does not work, after one year, you are being called by KRA [Kenya Revenue Authority], you have to submit these returns, and you have nothing. (Susan, Interview, 6 November 2019).

She stresses that the individual income tax return via KRA is the number one downfall for MSMEs in the local market.

It is important to note that almost all of the custom and ready-to-wear tailors take on additional work from a fashion designer or an enterprise. For instance, Peter Awino is involved in independent contract work. Textile and apparel manufacturers sub-contract
him to produce school uniforms, such as the pants and shirts at Kenya Medical Training College (KMTC) (Peter Awino et. al., Group Interview, 19 March 2020). He explains that it is good money. He supplies 300 pieces at 1,500 KSH (circa 13.65 USD) each, or 450,000 KSH (circa 4,093.51 USD) total. That is more than he makes producing and selling an individual dress to a client at 5,000 KSH (circa 45.48 USD). In a comparable manner, he undertakes contract work from the fashion designer, Deepa. He notes that, “Today, she will send somebody to bring me work,” such as an order for 30 dresses (ibid.). The additional contract work allows him to achieve a higher level of technological capabilities in production. He is able to expand his experience and skill set.

In a similar manner, Mandalia is the Owner of Tailor Madhvaji Arjan on Jomo Kenyatta Avenue in Mombasa. He explains that he employs custom tailors because of their skill set. He continues, “Right now, I am looking for at least two more tailors. I have interviewed about 20 youngsters, all coming from different institutions, every degree” (Mandalia, Interview, 19 October 2019). This indicates that the custom tailors achieve more than a basic level of technological capabilities to be desirable candidates in the local market.

**Fashion Designers**

Almost all of the fashion designers work at home, online, at a workshop or warehouse, and/or at a store. The entrepreneurs tend not to work at a stall or shop, at the marketplace, or on the side of the street. This is because the entrepreneurs have the resources to cover the overhead expenses, such as rent. For instance, Isabelle is a ready-to-wear fashion designer at Di Amor Designs. She shares that all of the activities take place in the same spot – a two-level shop in downtown Mombasa. The production activities occur on the second floor. She employs two tailors and owns three electric sewing machines. The retail operations occur on the first floor. She sells *kitenge* dresses, shirts, and suit jackets, with prices starting at 3,000 KSH (circa 27.29 USD) (Isabelle, Interview, 19 October 2019). Isabelle explains that the prices are a little more expensive in order to compensate for the rent at 40,000 KSH (circa 363.81 USD) per month (ibid.). Since all of the activities are executed in the same location, she has accumulated an intermediate level of technological capabilities in logistics operations.
There are a lot less moving parts in the production system. In addition, Di Amor Designs is located a block down from the marketplace: Marikiti. Isabelle explains, “We get our fabrics from Marikiti, different shops at Marikiti” (ibid.). She is able to achieve a higher level of technological capabilities in investment, such as sourcing inputs and sourcing time.

The combination of locations is the most common avenue for all of the fashion designers. This is because there is limited space at home or a store to manufacture the merchandise. There is not room for more than one or two sewing machines. For example, Waithĩra Mwangi is a ready-to-wear fashion designer, and the Founder of Ithira at Sarit Center in Nairobi. She oversees the production of the merchandise at a workshop and completes the transactions of the merchandise at a store in the mall (Waithĩra Mwangi, Interview, 20 February 2020). She points out, “Initially, when I set up the store…the idea for me was to get good clothes done in West Africa and bring them over, but that did not pan out” (ibid.). This is because her target audience “expected something custom-made” (ibid.). She continues that she needed to set up something internal. She hired two tailors to work at a workshop that she rents each month. She notes that the workshop is “a room with two sewing machines, an ironing board, and a table. That is the workshop” (ibid.). Waithĩra provides the materials, and her tailors find the “additionalss,” such as buttons and zippers. She admits that she lacks the technological capabilities in production. She does not know the “science of stitching” (ibid.). Instead, her strength is in investment, such as market research and project preparation.

After conducting market research, Waithĩra selected the store at Sarit Center due to the demographics. Her target demographic is 30- to 50-year-old women in the middle-to-upper income bracket that are able to spend 3,500 KSH (circa 31.84 USD) for a shirt. She explains that the customers that come to the mall do not “need your clothes…if they want something African, they can always get a hold of a fundi to stitch” (ibid.). Thus, she is not targeting students because “they may be broke.” Instead, she is targeting the “top 15 percent” (ibid.). She continues:
Cheap is expensive. You think you are saving on rent, then all you are doing is paying rent. You are also not driving people to the store. So, because the mall has a strategy for foot fall, I find myself in a good position within which to build a brand. So, all the marketing strategies and all the market research I used to do for clients, I can actually apply to my brand. (ibid.).

Waithĩra concentrates on the accumulation of technological capabilities in marketing and branding in order to be competitive in the local market.

In a similar fashion, Ria Ana Sejpal is a ready-to-wear fashion designer, and the Founder of Lilabare. In 2017, she started the production in her “garage with one tailor” and sold the merchandise in “funky boutiques and in cafes” (Ria Ana Sejpal, Interview, 21 April 2020). She realized that the production space was too small and moved the operations to a workshop. She explains that the workshop is “a massive room and empty space” (ibid.). The extra space allows her to expand her production operations, such as hiring an additional two tailors and a buttonhole maker. In addition, she notes, “I was looking at the numbers, and it was not adding up at all. And that is when I decided to start this online platform” (ibid.). She replaced the store with the website. Sejpal spent more than four months building and creating the website. She invested time and resources into “research and things” in order to connect to the local consumer. She contends that this investment was well worth it because “our only form of communication now is through technology” (ibid.). Through the online platform, Sejpal is able to achieve at least a high-intermediate level of technological capabilities in market research, and branding and marketing. She oversees the production of merchandise at a workshop and sells the end products online.

Meanwhile, Wandia Gichuru is a ready-to-wear fashion designer, and the Co-Founder and CEO of VIVO. She oversees the production activities in her warehouses at Spectrum Business Park, see Image 14. The rent for an individual warehouse is 219,860 KSH (circa 2,000 USD) per month. She rents four of them for a total of 879,440 KSH (circa 8,000 USD) per month (Wandia Gichuru, Interview, 24 February 2020).
Steven is a Finance Officer at VIVO. He explains that the enterprise moved locations because:

From a cost point of view, number one, you see these are *godowns* [warehouses], the other ones were office spaces. Therefore, they were expensive compared to these ones. Then number two, we also wanted to consolidate. The workflow was not very smooth. People were on different floors, so it was very difficult to coordinate. But here, everyone is in the same building, then it is easier because if there is a problem with design, you can be able to move quickly to that room. (Steven, Interview, 24 February 2020).

The new location cuts down on costs and streamlines the production process. The location is able to accommodate all of the steps in the production system, such as a section for steaming and pressing, fabric printing and cutting, production, design and samples, and a separate warehouse for marketing, retail, and online sales. One of the segments is a studio for promotional material. Everything is done in-house. Wandia notes, “98 percent of what we are selling is made here” (Wandia Gichuru, Interview, 24 February 2020). In the new location, Gichuru is able to accumulate a higher level of technological capabilities in logistics and logistics operations. This is because of the phase out of moving parts. It is a “smoother operation” (ibid.). Furthermore, Gichuru is able to accumulate at least an intermediate level of technological capabilities in investment. The location provides extra space to expand. Steven points out “there is room to grow” (Steven, Interview, 24 February 2020).
In addition, Gichuru explains that the new location is “a catchment area for textile staff…there is a very large EPZ factory down the road called United Arab that hires 4,000 people, and they have a training school and stuff like that” (ibid.). She is able to hire a combination of machine operators and tailors with a high level of technological capabilities in production in pieces. She oversees the contracts of 175 employees. This in turn allows her to accumulate a higher level of technological capabilities in production management and logistics.

Then, Gichuru manages the retail operations of the 14 stores scattered throughout Nairobi. Each store has between three and six employees (Wandia Gichuru, Interview, 24 February 2020). The discounted products are sold online because “our stores are not very big. So, we need to just make sure that we get maximum value for each space. We do not want to have half of the stores sitting on sale items, when we can have full
priced items in the stores” (Steven, Interview, 24 February 2020). Gichuru attempts to maximize the space in order to be competitive in the local market.

The fashion designers who cannot access a warehouse or workshop, whether due to financial constraints or otherwise, assume production operations at home and retail operations at a store or online. For example, Janet is the Co-Owner of Jokajok. She administers the production activities in the additional compound at her house in Ruaka, Nairobi next to Two Rivers Mall. She shares that, “Working from home is good because I do not have to pay rent” (Janet et. al., Group Interview, 13 March 2020). In addition, she is able to steer clear of taxes. She explains, “Jokajok, we have registered and put the patent on the name, but beyond that on paper there is nothing going on. Because the minute you start making it formal the government will tax you” (ibid.). Jokajok operates in the semi-formal arena. This allows Janet to reallocate the resources to other technological capabilities. That said, she warns that a main problem with working from home is:

The electricity bills. KPLC [Kenya Power and Lighting Company] charges electricity based on neighborhood, meaning that this is seen as an influential neighborhood, the bills are exorbitant. But if you are in Gikomba, the bills are always lower because it is hard to subsidize costs to the poor, so this is supposed to be subsidized for. One of the biggest overheads is the electricity, the electricity bill is 30,000 [(KSH) per month (circa 272.90 USD)]. (ibid.).

The location is a catch twenty-two. Janet sells the merchandise on their social media platforms and their website. She hires a social media manager to supervise the Facebook and Instagram accounts and target a specific demographic, such as middle-aged women in the middle-to-upper income bracket (ibid.). The maximum investment to online platforms allows her to accumulate technological capabilities in linkages, such as branding and marketing.
Stylists

Most of the stylists undertake all of their activities at home or at the office. Even the entrepreneurs in employment with a fashion designer or an enterprise run their operations at home or at an office, with off-site calls, such as at a fashion house or a photo shoot location. The seclusion of their work spaces allow the entrepreneurs to concentrate on the commercial aspect. The entrepreneurs avail themselves of the secluded space to invest their time to “dream” an improved or innovative design (Ria Ana Sejpal, Interview, 21 April 2020). This allows the entrepreneurs to accumulate an intermediate level of technological capabilities in product design.

Then, the entrepreneurs consider the means to promote that dream. The entrepreneurs plan and take part in promotional activities, such as Instagram Live Rooms and photo shoots. For example, Connie Aluoch is the stylist and Founder of Connie Aluoch Styling Management. She explains her role in the local market: “I see the designer, I look at the outfit, I help her commercialize it and sell it. How do I do this? Maybe through fashion editorials, putting them on the runway, using it as an influencer on social media” (Connie Aluoch, Interview, 7 October 2020). She adds that she organizes “photo shoots, corporate photo shoots, makeover shoots, one-on-one image consultancy” and more (ibid.). Thus, the entrepreneurs achieve an intermediate to advanced level of technological capabilities in the administrative and managerial aspects rather than the technical side, such as branding and marketing, production quality control, sourcing inputs, and market research.

On the other side of the coin, the entrepreneurs achieve a basic level of technological capabilities in product design. The entrepreneurs improve an existing product rather than invent a new one in order to meet the specifications of the consumer. Ria Ana Sejpal is the fashion designer and Founder of Lilabare. She shares that, “We all have our interpretations of what that means, that our styles are quite different” (Ria Ana Sejpal, Interview, 21 April 2020). That is where the stylists come in. Her point is that “You may go into a store, and if all four of our brands were there, you might end up buying one or two brands as opposed to all four because of the stylistic choices and things” (ibid.). The entrepreneurs accumulate the technological capabilities to put
together shows, photo shoots, and outfits that appeal to the local consumer. Their role is to improve the product, not imagine or reimagine the product.

In addition, the entrepreneurs accumulate a basic level of technological capabilities in production, such as equipment management, and production in pieces. The entrepreneurs do not own a manual or electric sewing machine at home or at the office, and cannot sew a more elaborate stitch than a straight stitch. For example, Connie explains that she does not draw or draft the designs (Connie Aluoch, Interview, 7 October 2020). The entrepreneurs do not prioritize the technical side of the trade.

Conclusion

The purpose of the chapter was to assess the impact of location on the process of accumulation of technological capabilities of the entrepreneurs in the local market. To start, I used the technological capability matrix to make out 11 of the most common locations: home, street, marketplace, stall, shop, store, office, workshop, warehouse, other enterprises, and online. I explained the extent to which the locations provide opportunities for the entrepreneurs to enhance their knowledge and expand their skill set, and the level of technological capabilities that the entrepreneurs are able to achieve over a period of time.

Based on the data collected, almost all of the tailors undertake their activities at home, online, on the side of the street, at the marketplace, at a stall or shop, at a store, and/or at other enterprises. These locations provide the tailors with opportunities to achieve at least an intermediate level of technological capabilities in production. For example, a tailor works on the side of the street with a lot of foot traffic. Due to the location, the entrepreneur secures a consistent stream of orders, such as an alteration of a dress or the repair of a t-shirt. This allows the tailor to achieve a higher level of technological capabilities in production in pieces.

In Nairobi, I observed little to no variation in gender distribution across these locations for the tailors. In Mombasa, however, I noticed that more female tailors undertake their activities at home; meanwhile, more male tailors undertake their activities on the side of the street. One explanation is that Mombasa is home to a deeply-religious and diverse
population of Christians and Muslims that support women staying and working at home. For example, Priscilla is a custom-made tailor in Mombasa. She produces and sells merchandise at home, relying on word-of-mouth and WhatsApp to secure customers. Priscilla describes working from home as the best of both worlds because she is able to stay at home with her daughter and she does not have to “pay anything,” such as a license or permit (Priscilla, Interview, 18 October 2019). Moreover, her husband supports her entrepreneurial activities: “My hubby bought it [an electric sewing machine] for me. It is automatic, electric. He supports me” (ibid). Raphael Abdulmajid Ighombo, Head of the Education Department at the National Museums of Kenya and the Swahili Cultural Center, echoes such sentiments. He explains that most female tailors in Mombasa receive orders from word-of-mouth or WhatsApp because, “Muslim women are somehow only in the houses, they do not go out so much” (Raphael Abdulmajid Ighombo, Interview, 30 September 2019). In a similar manner, Khadija Ridhwan is the Head Instructor at KHTI. She shares that all of the apprentices are female because “since the place is for Swahili culture, it was initiated by the Muslim community, so, as you know, Muslims, they do not mix men and women” (Khadija Ridhwan, Interview, 7 October 2019). She adds, “For as long as you are a lady, you are welcome. It does not matter the faith. If you are an artist, you are also welcomed” (ibid).

Due to the distinctions in location, the female tailors who work at home do not encounter the same opportunities as the male tailors who work on the side of the street, and vice versa, and therefore, do not achieve the same level of technological capabilities. The female tailors who undertake their activities at home accumulate a higher level of technological capabilities in production quality control and product development. This is because the location provides the entrepreneurs with the space to be creative and careful in the production of pieces. The female tailors are producing and selling individual pieces. In contrast, the male tailors who undertake their activities on the side of the street accumulate a higher level of technological capabilities in production in pieces and trouble-shooting. This is because the location provides the entrepreneurs with a reliable stream of orders for alterations and repairs. The male tailors are producing and repairing as many pieces as possible. Importantly, I did not observe
variation in gender distribution across these locations among the fashion designers and stylists.

Most of the fashion designers undertake their activities at home, online, at a workshop or warehouse, and/or at a store. These locations provide the fashion designers with opportunities to accumulate at least an intermediate level of technological capabilities in investment and linkages. For instance, a fashion designer works at a store in the mall with substantial foot traffic. Since the location is permanent and stable, the entrepreneur is able to build a client base. This allows the fashion designer to achieve a higher level of technological capabilities in branding and marketing.

The stylists stand out from the tailors and the fashion designers. Almost all of the stylists undertake their activities at home or at the office. These locations provide the stylists with opportunities to accumulate at least an intermediate level of technological capabilities in linkages. There is no need for the entrepreneurs to rent a space to store equipment, such as a workshop or warehouse. This is because the entrepreneurs concentrate on the commercial stage of the production system, rather than the actual production of the apparel. For example, a stylist works at an office space that is located downtown. Due to the location, the entrepreneur is able to provide one-on-one consultations with his or her clients. This allows the stylist to achieve a higher level of technological capabilities in consumer standards.

I contend that all of the locations present opportunities for the entrepreneurs to achieve a higher level of technological capabilities; however, not all of the entrepreneurs are able to access all of the locations in the local market. Therefore, I made use of the matrix to understand the extent to which the entrepreneurs make the most of their location in order to accumulate technological capabilities. For example, a tailor sews together a t-shirt at a stall rather than at home in order to cut down on the overhead costs. This is because the location is inclusive of all utilities, electricity in particular. In doing so, the tailor accumulates a higher level of technological capabilities in project preparation and production management. While not all of the entrepreneurs start off at the same point, the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter
and be competitive in the local market. This is important as not all of the entrepreneurs start off at the same point.
Chapter 8: Conclusion

Summary of Thesis

How do the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market?

This is an important question to address. There is a versatile and vibrant local market in Kenya that is under-researched – a market made up of entrepreneurs that produce and reproduce textiles and apparel for the local consumer. The entrepreneurs take advantage of the opportunities that extend from the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. For example, a tailor purchases a pair of pants from the second-hand clothing market and replaces the back pockets with kitenge from the local market in order to accumulate technological capabilities in innovation. Or a fashion designer participates in an in-house training program at an EPZ enterprise in order to accumulate technological capabilities in production. The entrepreneurs are not passive or reactive but rather responsive to the global textile and apparel value chain, reorienting and transforming the resources available to respond to the local consumer demand.

To answer the question, I adopted the TC approach in combination with the GPN approach, and drew on scholarship in African studies, global value chains, international development, technological capabilities, and textile and apparel production, in order to access all of the activities that the entrepreneurs assume in order to accumulate the technological capabilities needed to enter and be competitive in the local market. Throughout the research project, I showed the ways in which the entrepreneurs engage with the global textile and apparel value chain to enhance their knowledge and expand their skill set. I revealed how the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process. This is an important contribution to the literature that currently diminishes the role of the construction of knowledge in the local market.
In the second chapter, I reviewed the relevant literature on the local market with special reference to Mombasa and Nairobi. The literature on the local market is looked at through the lens of the global textile and apparel value chain (Baden, Barber, 2019; Balchin, Calabrese, 2019; Rani, Kumar, 2018; Tyce, 2018; Calabrese et. al., 2017; Whitfield, Staritz, 2017a; Whitfield, Staritz, 2017b; Brooks, 2013; Frazer, 2008; Brenton, Hoppe, 2007). The emphasis is on the extent to which participation in the global textile and apparel value chain contributes to economic growth and industrial development (Deléchat, Medina, 2020; Allaro, 2012; Ahmed et. al., 2011; Chaddha et. al., 2009; Morrison et. al., 2008; Mangieri, 2006). This is because participation in the global textile and apparel value chain provides the entrepreneurs with opportunities to accumulate an advanced level of technological capabilities. Therefore, EOI is described as a driver of economic growth and industrial development (Allaro, 2012; Ahmed et. al., 2011; Mangieri, 2006). It is important to reiterate that the literature on the local market does not disregard or ignore the contributions of the entrepreneurs who produce for the local consumer, but rather it gives greater prominence to the entrepreneurs who produce for the global consumer.

Due to the emergent role of the textile and apparel sector in economic growth and industrial development, academics such as Katherine Frederick (2018) and Garth Frazer (2008) have expressed concerned that importation of second-hand clothes is potentially harmful to the industrialization process. This is because the second-hand clothing market presents “alternative employment opportunities” that draw the entrepreneurs away from the local market (Frederick, 2018, p. 23). The increased competition from imported products eliminates the incentive for the entrepreneurs to accumulate the technological capabilities in areas, such as production (Rani, Kumar, 2018; Frazer, 2008).

Since the emphasis is on the technological capabilities of the global market, I claimed that the conversation on the local market in relation to the global textile and apparel value chain is unable to adequately characterize the construction of knowledge in the local market. The entrepreneurs engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive.
in the local market rather than the global market. To provide a more nuanced assessment, I put the local market and the entrepreneurs who operate in the local market at the center of the analysis. I was not interested in the entrepreneurs at the front-end of the global textile and apparel value chain, or even the haute couture fashion designers in the local textile and apparel value chain, but rather those at the so-called “back-end of the value chain” (Gregson et. al., 2010, p. 847). More specifically, the tailors, fashion designers, and stylists. I conceptualized the entrepreneurs as agents of change who contribute to and challenge production process parameters.

In addition, I considered the application of three approaches: GCC, GVC, and GPN. While all of the approaches present each stage in the production system, the GPN approach is the most appropriate tool to capture the complex relations between chain and non-chain actors, such as business associations and the state. This is critical as non-chain actors play a prominent role in shaping the process of accumulation of technological capabilities (Horner, Nadvi, 2018, p. 209). That said, the GPN approach is limited in the understanding of all of the learning avenues that the entrepreneurs undertake in order to accumulate technological capabilities. Thus, I turned to the TC approach to use in conjunction with the GPN approach.

The TC approach is concerned with the process of accumulation of technological capabilities at the microeconomic level. I adopted the TC approach to assess all of the activities that the entrepreneurs in the local market undertake in order to accumulate technological capabilities – a concept that refers to the experience, knowledge, and skills that an individual or an organization accumulates over a period of time. The combination of the GPN and TC approaches was the best avenue to address the research question because the GPN approach is a pragmatic tool that considers all of the entrepreneurs and their potential connections in the local market, and the TC approach is a practical tool that covers all of the activities that the entrepreneurs participate in over a period of time. I combined the approaches in order to understand the construction of knowledge in the local market.

In the first half of the third chapter, I discussed the application of the TC approach. I designed a two-dimensional technological capability matrix of functions and levels with
a criteria for each cell that reflects the realities of the local market. This is a critical contribution to the literature on technological capabilities that tends to set the criteria to the standards of the global market rather than the local market (Whitfield, Staritz, 2017b; Yuri, Mai, 2009; Lall, 1992). I used the technological capability matrix to assess all of the activities that the entrepreneurs in the local market undertake in order to acquire knowledge over time, and then absorb and adapt that knowledge to the local conditions.

In the second half of the third chapter, I teased out the merits of the methodological approach taken to answer the research questions. I selected qualitative research methods in the form of semi-structured interviews and surveys to tackle the phenomenon. I relied on the 130 semi-structured interviews to provide detailed descriptions of all of the available avenues to accumulate technological capabilities, and depended on the 50 surveys to provide descriptive statistics about the socio-demographic characteristics of the entrepreneurs. The combination of semi-structured interviews and surveys painted a more comprehensive picture of the accumulation process of technological capabilities in the local market.

In the fourth chapter, I spent a considerable amount of time contemplating an umbrella term to characterize the individuals in the local market, especially the tailors, fashion designers, and stylists. Since the purpose of the research project is to understand the extent to which the individuals engage with the global textile and apparel value chain in order to accumulate the technological capabilities required to enter and be competitive in the local market, I selected "entrepreneur" as the umbrella term. I acknowledge that the term "entrepreneur" has been applied in problematic ways with little to no consideration that self-employment is not always a choice, or that the structure of the local market is at times a constraint, specifically the business environment, inadequate infrastructure, and economic policies. Thus, I made certain to apply the term to characterize the activities that individuals assume in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

Then, I considered the application of the GPN approach in conjunction with the TC approach. Under the GPN approach, I identified all of the entrepreneurs that extend the
production process of the global textile and apparel value chain into the local market, especially the tailors, fashion designers, and stylists. The GPN approach was a useful tool to map out the complex connections between chain and non-chain actors. For example, a fashion designer becomes a member of the KFCO in order to access regional and international incubators. In addition, under the GPN approach, I showed that segmentation in the local market is limited. The entrepreneurs target as many consumers as possible, regardless of their shared characteristics or specific preferences. One explanation for the lack of segmentation in the local market is the lack of materials, especially intermediate materials, which diminishes product differentiation.

Then, under the TC approach, I evaluated the entrepreneurs based on their functions rather than their common classifications. I avoided a normative analysis, and instead provided an impartial account of the functions of the entrepreneurs in the local market. The impartial account involved observations without questions that have absolute answers. This allowed me to represent the realities of the local market in a more accurate manner.

That said, I acknowledged that the accounts do not recognize heterogeneity among the entrepreneurs in the same group. Not all of the entrepreneurs in the same group accumulate the same level of technological capabilities in the local market. This is especially true for the tailors. For example, a tailor who takes on the additional roles and responsibilities of a second-hand clothing retailer is able to accumulate a higher level of technological capabilities in sourcing inputs than the average tailor. Thus, the purpose of the fourth chapter was to paint an overall picture of the entrepreneurs in the local market and serve as a reference point for the rest of the thesis.

In the fifth chapter, I made use of the technological capability matrix to characterize all of the technological capabilities of the entrepreneurs in the local market. I started with an evaluation of each of the entrepreneurs in order to determine the width of functions performed (investment, production, innovation, logistics operations, and linkages) and the level of capabilities accumulated with each function (basic, intermediate, and advanced). I created a matrix for each of the entrepreneurs in the local market. Then, I classified the entrepreneurs together into categories, and used the individual matrices to
calculate the mean rank for each of the categories. In doing so, I was able to paint a more comprehensive picture of the construction of knowledge in the local market. The technological capability matrix was a practical tool to examine the extent to which the entrepreneurs take advantage of the opportunities in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. For example, a tailor who purchases a white t-shirt from the second-hand clothing market and replaces the sleeves with kitenge from the local market is able to accumulate a higher level of technological capabilities in product development. The entrepreneurs in the local market navigate and negotiate the opportunities that arise from the global textile and apparel value chain to produce and reproduce clothes for the local consumer. This shows the extent to which the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process. I concluded that all of the entrepreneurs in the local market accumulate more than the basic level of technological capabilities in order to enter and be competitive in the local market.

In the sixth chapter, I assessed all of the learning activities that the entrepreneurs in the local market seek out as a means to accumulate the technological capabilities needed to enter and be competitive in the local market. I argued that the tailors take part in informal learning activities in order to accumulate practical skills. Informal learning provides hands-on, practical experiences. In contrast, the fashion designers take part in formal learning activities in order to advance their theoretical knowledge. Formal learning is theoretical in nature. The baseline level of technological capabilities is sufficient to enter the local market, but it is not enough to remain competitive. Therefore, the entrepreneurs need to continue to enhance and expand their technological capabilities in order to avoid moving down from a higher level to a lower level. The entrepreneurs pursue a combination of formal and informal learning activities in order to accumulate a competitive level of technological capabilities. In the matrix, I showed that formal learning activities alone are not enough for the entrepreneurs to accumulate the technological capabilities needed to enter the local market. This is because the formal learning activities prioritize the administrative and managerial capabilities over the
technical capabilities. Thus, in the local market, formal learning is a supplement rather than a substitute to informal learning.

In the seventh chapter, I looked at the impact of location on the process of accumulation of technological capabilities of the entrepreneurs in the local market. I made use of the technological capability matrix to make out 11 of the most common locations in the local market: home, street, marketplace, stall, shop, store, office, workshop, warehouse, other enterprises, and online. I argued that all of the locations provide opportunities for the entrepreneurs to accumulate the technological capabilities needed to enter and be competitive in the local market. For example, a tailor who works at the marketplace is able to accumulate more technological capabilities in production in pieces because he or she receives a consistent stream of orders for alterations and repairs; whereas a fashion designer who works in a warehouse is able to accumulate more technological capabilities in logistics and distribution because he or she is able to perform the entire production process in a single spot. However, not all of the entrepreneurs are able to access all of the locations in the local market. This is important because not all of the locations provide the same opportunities to accumulate technological capabilities. Therefore, I applied the matrix to examine the extent to which the entrepreneurs make the most of their location in order to accumulate technological capabilities. While not all of the entrepreneurs start off at the same point, the entrepreneurs position and reposition themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.

In the conclusion, I stress the significance of the phenomenon at hand: the entrepreneurs participate in the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. I consider the contributions of the thesis to the existing literature on the technological capabilities in the textile and apparel sector that looks at the local market through the lens of the global value chain. In addition, I explain the potential implications of the COVID-19 pandemic on the local market. This is critical as the pandemic has changed the concept of learning for the foreseeable future. I recommend avenues for future research, and encourage scholars to consider the construction of knowledge in
the local market. I conclude with a policy recommendation to advance the accumulation of technological capabilities in the local market.

**Summary of Research Question and Sub-Research Questions**

In the thesis, I answered the research question: how do the entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market? I revealed that the entrepreneurs participate in activities that extend from the global textile and apparel value chain in order to accumulate the technological capabilities required for the local market. For example, a tailor accepts alterations and repairs from the second-hand clothing market in order to accumulate technological capabilities in production in pieces. Practical skills are a prerequisite to enter the local market. The angle of the thesis is innovative in the sense that it considers the technological capabilities essential to enter and be competitive in the local market rather than the global market. This addresses an oversight in the existing literature on the technological capabilities in the textile and apparel sector that looks at the local market through the lens of the global value chain.

In addition to the main research question that motivated the research project, I addressed four additional research questions:

1. In what ways do the entrepreneurs impact the local market through their engagement with the global textile and apparel value chain?
2. To what extent do the entrepreneurs navigate and negotiate the resources available, including the resources from the global textile and apparel value chain, in order to enter and be competitive in the local market?
3. What activities do the entrepreneurs undertake in order to enter and be competitive in the local market?
4. To what extent does location impact the level of technological capabilities of the entrepreneurs? How do the entrepreneurs position and reposition themselves in the local market in order to encounter opportunities to accumulate technological capabilities?
The first question is, in essence, a response to the main question. I wanted to examine the ways in which the entrepreneurs shape the structure and subsequent processes of the local market via their engagement with the global textile and apparel value chain. The entrepreneurs search for activities to enhance their knowledge and expand their skill set, especially activities that tend to be informal in nature. For example, a fashion designer assumes an apprenticeship at an EPZ enterprise in order to learn the technical skills of the trade. The entrepreneur accumulates at least a basic level of technological capabilities in equipment management. This is because the entrepreneur is able to work on updated equipment and machinery. The local market has responded with the introduction of semi-formal activities. As of 2020, the entrepreneurs are able to take the NITA-affiliated TVET institution exam without taking the course. In doing so, the entrepreneurs receive formal recognition for informal experience in the local market. The semi-formal activities consider the technological capabilities of the entrepreneurs, “regardless of how, when, or where learning occurred” (NITA, 2020). Eileen Nguthari is the Head of the Garments Section and Industrial Training Officer at NITA Textile Training Institute. She explains:

In the past, one was required to go from one level to another, but now with the new qualifications framework and there is the recognition of prior learning, we are appreciating that there are people who have skills, but they have never been tested. So, for the first time this year, it is open…So, do you have this skill? Then, you will be tested on that skill. (Eileen Nguthari, Interview, 19 March 2020).

Thus, the tailor who assumes an informal apprenticeship at an EPZ enterprise is able to receive a formal certificate. In that sense, the entrepreneurs have shaped the ways in which prior learning is recognized in the local market.

The second question is related to how the entrepreneurs source the resources required to enter and be competitive in the local market. This question is posed in respect to the low-production of textiles and apparel and the high-import tax on textiles and accessories. Against the grain of literature on the local market, which encourages the production of exports in order to participate in the global value chain (Allaro, 2012;
Ahmed et. al., 2011; Mangieri, 2006), or expresses alarm about the impact of the importation of second-hand clothes (Frederick, 2018; Rani, Kumar, 2018; Frazer, 2008), I explained that the entrepreneurs capitalize on the resources available in the global textile and apparel value chain in order to enter and be competitive in the local market. For example, a fashion designer sources an excess roll of printed fabric from an EPZ, which is the part of the global textile and apparel value chain that produces the final product. Or a tailor sources a t-shirt from the second-hand clothing market, which is the part of the global textile and apparel value chain that resells the final product. The entrepreneurs respond rather than react to these opportunities, and transform those materials into merchandise that meets the expectations and preferences of the local consumer. In doing so, the entrepreneurs extend the production process of the global textile and apparel value chain into the local market.

The third question is designed to draw attention to the learning avenues in the local market. I showed that all of the entrepreneurs participate in formal and informal learning activities in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The entrepreneurs who participate in informal learning activities accumulate at least the basic level of technological capabilities needed to enter the local market. This is because the informal learning activities adhere to the standards of the local market. The informal learning activities prepare the entrepreneurs with the fundamental practical skills, such as technological capabilities in production. In contrast, the entrepreneurs who participate in formal learning activities do not accumulate the basic level of technological capabilities needed to enter the local market. This is because the formal learning activities adhere to the standards of the global market. The formal learning activities provide the entrepreneurs with the theoretical knowledge, such as technological capabilities in branding and marketing. This is not sufficient to enter the local market. Therefore, those entrepreneurs need to participate in additional formal learning activities or undertake informal learning activities in order to enter the local market. In this sense, formal learning is a supplement rather than a substitute to informal learning. All of the entrepreneurs need to continue to participate in formal and informal learning activities in order to be competitive in the
local market. The accumulation of technological capabilities is a continuous process; learning is a continuous process.

In relation to the third question, I revealed the role of the local market in the process of the accumulation of technological capabilities. All of the formal and informal learning activities originate from the local market, with the exception of the formal learning programs. The entrepreneurs seek out formal and informal activities in the local market in order to accumulate the technological capabilities needed to enter and be competitive in the local market. This is in conjunction with opportunities that arise from the global market. While the heart of the thesis is an interest in how the entrepreneurs in the local market engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market, I highlighted the contributions of the local market in the process of accumulation of technological capabilities. This is significant as the GOK continues to push for economic strategies with an emphasis on vocational training in the textile and apparel sector, such as the KITP, the Big Four Agenda, and the Kenyan Vision 2030 (Republic of Kenya, 2012; Omolo, 2006).

The first part of the fourth question is about the correlation between location and technological capabilities. The answer is implicit in the question with the idea that location is important in the process of accumulation of technological capabilities. I showed the extent to which the locations in the local market provide opportunities for the entrepreneurs to accumulate technological capabilities. For example, a tailor who works on the side of the street that is near or next to the second-hand clothing market is able to secure a reliable stream of repairs. For that reason, the tailor is able to achieve at least an intermediate level of technological capabilities in production. The entrepreneurs take advantage of those opportunities in order to accumulate the technological capabilities needed to enter and be competitive in the local market.

The second part of the fourth question is about the extent to which the existing socio-economic structures shape the starting point for the entrepreneurs in the local market. While all of the locations present opportunities for the entrepreneurs to achieve a higher level of technological capabilities, not all of the entrepreneurs are able to access all of
the locations in the local market. This is important as not all of the locations present the same opportunities to accumulate technological capabilities. Based on the data collected, most of the tailors come from low socio-economic backgrounds with limited access to resources; whereas most of the fashion designers and stylists come from high socio-economic backgrounds with greater access to resources. Due to the greater access to resources, the fashion designers tend to encounter more opportunities to accumulate technological capabilities. For example, a fashion designer is able to afford the rent of a warehouse at 219,860 KSH (circa 2,000 USD) per month (Wandia Gichuru, Interview, 24 February 2020). The warehouse provides the entrepreneur with opportunities to accumulate at least an intermediate level of technological capabilities in investment, logistics operations, and linkages. That is not to say that a tailor is unable to leverage his or her social capital in order to secure that location, but rather that the opportunities available to him or her are limited. It is important to point out that access to capital (social or otherwise) is but one of the socio-economic components that shape the opportunities available to the entrepreneurs to accumulate technological capabilities. Despite the different starting points, all of the entrepreneurs make the most out of their location, positioning and repositioning themselves in order to encounter opportunities to accumulate the technological capabilities needed to enter and be competitive in the local market.

The entrepreneurs in Mombasa and Nairobi engage with the global textile and apparel value chain in order to accumulate the technological capabilities needed to enter and be competitive in the local market. The accumulation of technological capabilities is a continuous process – a process that ensures that the entrepreneurs are not dependent on the circumstances or conditions of the textile and apparel sector. Instead, the entrepreneurs extend the production process of the global textile and apparel value chain via the accumulation of technological capabilities. The conclusions presented in the thesis provide a more nuanced account of the process of accumulation of technological capabilities, and the extent to which those technological capabilities contribute to economic growth and industrial development in the local market.
Contributions to the Research Agenda

I narrowed the scope of the research project in order to provide a more accurate assessment of the activities that the entrepreneurs pursue in order to accumulate the technological capabilities required to enter and be competitive in the local market. The research project contributes to the literature on technological capabilities that is written from the vantage point of the global textile and apparel value chain (Whitfield, Staritz, 2017b; Yuri, Mai, 2009; Lall, 1992), and the literature on the textile and apparel sector that devalues or diminishes the construction of knowledge in the local market (Apunda et. al., 2017; Rabine, 2002; Kabecha, 1999).

More specifically, the research project contributes to the research agenda in three crucial areas: (i) the application of the technological capability matrix that adheres to the standards of the local market; (ii) the contributions of the local market and the entrepreneurs in the local market to economic growth and industrial development in Kenya; and (iii) the impact of second-hand clothing imports on the development of the Kenyan textile and apparel sector. In addition, the research project laid the foundation for a future area of research: (iv) the mid- to long-term impact of COVID-19 on the technological capabilities of the entrepreneurs in the local market. These contributions are not listed in the order of importance.

The first contribution of the thesis is the development of a technological capability matrix that adheres to the standards of the local market rather than the global textile and apparel value chain. In the thesis, I created a technological capability matrix based on the width of functions performed in the local market (investment, production, innovation, logistics operations, and linkages) and the level of capabilities accumulated with each function (basic, intermediate, and advanced). This is essential because the definitions of functions in the local market do not always correspond to the definitions of functions in the global market. For example, in the local market, branding and marketing is the ability to promote a good or service. The entrepreneurs promote their products via word-of-mouth in order to attract the attention of the local consumer. In the global textile and apparel value chain, branding and marketing is the ability to “access to distribution channels abroad” (de Vasconcellos et. al., 2015, p. 398). The entrepreneurs promote
their products via long-term, strategic planning in order to elevate the status of the enterprise. Thus, the criteria in the matrix is critical. The criteria determines the level of technological capabilities achieved in the accumulation process of technological capabilities. A technological capability matrix that adheres to the standards of the local market is able to paint a more comprehensive picture of the construction of knowledge in the local market.

Furthermore, a technological capability matrix that adheres to the standards of the local market rather than the global textile and apparel value chain is able to show the level of technological capabilities required to enter and be competitive in the local market. For example, an entrepreneur needs an intermediate level of technological capabilities in production in pieces in order to be competitive in the local market. This is because most of the merchandise is made-to-measure rather than mass-produced. The knowledge and skill set to measure and make alterations or produce a piece is imperative in the local market. Meanwhile, an entrepreneur does not need to accumulate an intermediate level of technological capabilities in production in pieces in order to be competitive in the global textile and apparel value chain. This is because production in a general sense is perceived “as activities with low value added and low entry barriers” (Yuri, Mai, 2009, p. 7). The global textile and apparel value chain puts more prominence on investment, innovation, and linkages than production (Whitfield, Staritz, 2017b, p. 29). Thus, a technological capability matrix that adheres to the standards of the local market rather than the global textile and apparel value chain reveals the requirements to enter and be competitive in the local market.

I encourage future research endeavors to adopt a similar approach in the creation of a technological capability matrix that adheres to the standards of the local market rather than the global market. In particular, I recommend that a similar approach be adopted to assess the accumulation of technological capabilities in other sub-sectors of manufacturing, such as agricultural-processing or leather-making. It would be of the utmost importance to understand the process of accumulation of technological capabilities in other sub-sectors, and the level of technological capabilities achieved. For example, an entrepreneur in the leather sub-sector could accumulate a higher level
of technological capabilities in investment than an entrepreneur in the local market. This is because it is easier to source the intermediate materials essential to produce a leather purse (Janet et. al., Group Interview, 13 March 2020). Likewise, an entrepreneur in the leather sub-sector could accumulate a similar level of technological capabilities in innovation as an entrepreneur in the local market because both of the entrepreneurs incorporate local cloth, such as kitenge. I envision that such patterns of accumulation across sub-sectors of manufacturing would spark additional research endeavors in relation to technological capabilities.

The second contribution of the thesis is the assessment of the contributions of the local market and the entrepreneurs in the local market to economic growth and industrial development in Kenya. The entrepreneurs in the local market continue the production process of the global textile and apparel value chain into the local market. That extension of the production process presents opportunities for the entrepreneurs to achieve a higher level of technological capabilities. For instance, a tailor transforms a t-shirt from the second-hand clothing market, accumulating an intermediate to advanced level of technological capabilities in product development. Or a fashion designer sources excess materials from an EPZ enterprise, accumulating an intermediate level of technological capabilities in sourcing inputs. This engagement with the global textile and apparel value chain improves the capacity building of the entrepreneurs, which in turn contributes to the economic growth and industrial development in the local market.

Furthermore, that extension of the production process presents opportunities for the entrepreneurs to share their knowledge with other entrepreneurs in the local market. For instance, a tailor arranges a purchase agreement with an importer in the second-hand clothing market in order to receive the cream of the crop in regard to bales. In doing so, the entrepreneur achieves an intermediate level of technological capabilities in sourcing inputs. A retailer in the second-hand clothing market observes that purchase agreement, and later replicates the arrangement with another importer in order to accumulate a similar level of technological capabilities in sourcing inputs. This engagement with the global textile and apparel value chain increases the dissemination
of knowledge in the local market, which is a critical component to economic growth and industrial development.

All of the entrepreneurs are agents of change who act as catalysts for economic growth and industrial development. The entrepreneurs contribute to the construction of knowledge in the local market via capability building and the dissemination of knowledge. I recommend that future research projects put the local market and the entrepreneurs in the local market at the center of the analysis in order to capture the contributions of the back-end of the value chain.

The third contribution of the thesis is the consideration of the impact of second-hand clothing imports on the development of the textile and apparel sector in Kenya. The impact of the importation of second-hand clothes on the production of textiles and apparel is well-documented (Calabrese et. al., 2017; Baden, Barber, 2015; Brooks, Simon, 2012; Ahmed et. al., 2011; Frazer, 2008; Field, Schmidt, 2007; Mangieri, 2006; Ouvertes Project, 2005). For the most part, the literature is in agreement that the importation of second-hand clothes is detrimental for the development of the textile and apparel sector. For example, Garth Frazer claims that the impact of second-hand clothing imports is “substantial and significant” in the decline of textiles and apparel production because local manufactures have no incentive to produce (Frazer, 2008, p. 1781). Sally Baden and Catherine Barber concur that the importation of second-hand clothes has “played a role in undermining industrial textile/clothing production” (Baden, Barber, 2015, p. 2). This is because the textile and apparel manufacturers are “unable to compete” with the high-quality and low-cost second-hand clothing imports (ibid., p. 14). While the literature is cognizant that “such imports have not been the only cause” for the closure of textile and apparel manufacturers (ibid., p. 2), comparing and contrasting other contributing factors, such as the “increased competition from imported Asian clothing producers” (Brooks, Simon, 2012, pp. 1277, 1284), or the declining purchasing power that “depresses demand for clothes produced domestically” (Calabrese et. al., 2017, p. 4), the consensus is that the importation of second-hand clothes is not ideal for the development of the textile and apparel sector in Kenya.
I contend that the importation of second-hand clothes presents a series of challenges for the development of the textile and apparel sector in Kenya, especially for textile and apparel manufacturers, such as KICOMI and RIVATEX. That said, I assert that the importation of second-hand clothes is not necessarily detrimental for the development of the textile and apparel sector. At least, not entirely. This is because the importation of second-hand clothes presents alternative avenues for the development of the local market. In particular, the second-hand clothing market provides a space for the entrepreneurs in the local market to accumulate an intermediate to advanced level of technological capabilities. For example, the entrepreneurs in the local market are able to achieve a higher level of technological capabilities in sourcing inputs and sourcing time by procuring materials from the second-hand clothing market. Likewise, the entrepreneurs in the local market are able to achieve a higher level of technological capabilities in product design and product development by creating collections that combine African print and second-hand clothes. Since I put the local market at the center of the analysis, I provide a distinctive contribution to the debate on the impact of second-hand clothing imports on the development of the Kenyan textile and apparel sector. I diverge from the “good or bad” binary in order to demonstrate the messy complexities of the second-hand clothing market.

The fourth contribution of the thesis is the groundwork for future research projects to look at the mid- to long-term impact of the COVID-19 pandemic on the technological capabilities of the entrepreneurs in the local market. I completed fieldwork right at the start of the COVID-19 pandemic. The conditions in the local market have changed a considerable amount in the last two years. Future research projects should assess the impact of the pandemic on the technological capabilities of the entrepreneurs in the local market. For example, I expect that more entrepreneurs have moved online due to the containment measures. This could impact the level of technological capabilities in consumer relations, such as for the fundis who depend on face-to-face interactions for basic communication purposes. In addition, I am well aware that most of the entrepreneurs have changed or expanded their operations to produce medical equipment (Ria Ana Sejpal, Interview, 21 April 2020). This could impact the level of technological capabilities in production of pieces, such as for the fashion designers who
tend to achieve a basic level of technological capabilities in production in pieces. Future research projects could provide a quantitative assessment of the shift in production. I talk about the current status of the COVID-19 pandemic in the next section.

I encourage future researchers to expand on the research project with the entrepreneurs in the local market at the center of the analysis. Future researchers need to reconsider the contributions of the local market to economic growth and industrial development in and out of the context of the global textile and apparel value chain. The thesis is evidence to the extent to which the production process of the global textile and apparel value chain continues into the local market, and the ways in which the accumulation of technological capabilities influence that process. The thesis does much of the legwork for future research projects.

**COVID-19**

In the first quarter of 2020, the COVID-19 pandemic led to a three percent drop in trade values around the world (Teodoro, Rodriguez, 2020). The World Trade Organization (WTO) estimates that trade volumes decreased between 13 to 20 percent (WTO, 2020); the International Monetary Fund (IMF) reports that trade volumes decreased 6.3 percent (IMF, 2020).

The measures implemented to contain the spread of COVID-19 have resulted in disastrous repercussions for all sectors (Hartwhich, 2020). The textile and apparel sector is no exception. These repercussions include: changing the spending patterns of consumers with reduced spending on non-essential categories; decreasing productivity levels in production because of social distancing requirements; disrupting the supply chains due to border closures and travel restrictions; postponing announcements, such as the launch of a new collection or an expansion; and bankrupting MSMEs, especially those in the informal sector who lack cash reserves and protection provided in more formal structures (IMF, 2020; WTO, 2020).

In 2020, the COVID-19 pandemic and subsequent containment measures dealt the Kenyan textile and apparel sector “a huge blow” (Makumi et. al., 2021, p. 15). The sector experienced an 8.6 percent decline in trade (Were, Ngoka, 2022, p. 20).
percent of the textile and apparel manufacturers reduced their casual workforce and 27 percent reduced their permanent workforce. The unemployment rate increased from 2.6 percent in 2019 to 6.2 percent in 2020 (Makumi et. al., 2021, p. 15). It is important to point out that these percentages do not include unemployment in the informal sector.

That said, the COVID-19 pandemic has also provided an avenue for the local entrepreneurs to tap into the global textile and apparel value chain. Since March 2020, the entrepreneurs have repurposed the production lines to produce medical equipment: gloves, hospital wear, and masks. For example, the Kitui County Textile Centre shifted operations from the production of embroidered place mats and napkins to the production of more than 30,000 surgical masks with N95 respirators a day – a transition that took less than a week (Bearak, 2020). In a similar manner, Ria Ana Sejpal is the Founder and Director of Lilabare. Since the COVID-19 pandemic, she has curated high-end collections of masks. She launched the first collection in late-March, which led to an increase in sales on the Lilabare website. In less than a month, she sold over 400 masks – most to international clients in the USA, UK, Netherlands, and Germany. She realizes that the sales are “very contingent on what happens during this coronavirus period,” but seeks to take advantage of the situation (Ria Ana Sejpal, Interview, 21 April 2020). Sejpal sells the “luxe face mask” on her social media accounts and website for 2,494.80 KSH (circa 22 USD), see Image 15 (Lilabare, 2022).
Waithĩra Mwangi is the Founder and Director of Ithira. On 4 April 2020, she started producing and selling masks. She sells a mixture of *kitenge* print masks on her social media accounts for 350 KSH (circa 3.09 USD), see Image 16 and Image 17 (Ithira, 2021; Ithira, 2020).

*Image 15: Lilabare Lux Face Mask (Lilabare, 2022)*
Image 16: Ithira Face Mask (Ithira, 2020)
The COVID-19 pandemic has provided an avenue for the entrepreneurs in the local market to showcase their technological capabilities to those in the global textile and apparel value chain. The entrepreneurs have the chance to lead the local market in a new direction.

This redirection in production has not been disregarded or overlooked. Sandra Chege is the Arts and Communication Manager at the British Council Kenya. She elaborates:

Post-COVID, we will be looking at a different world. We are already seeing that. Lots of factories that were making garments for export have now shut
that part of their business down and are focusing on trying to supply Kenya with all the necessary medical attire related things. So, whether it is the clothing products or the masks, or things related to that, a lot of people are now asking the questions of, “Oh, you mean, we have the capacity to do this work?” So, I think, now, this is the opportunity created for fashion businesses.” (Sandra Chege, Interview, 9 April 2020).

The British Council perceives the COVID-19 pandemic as an opportunity for the entrepreneurs in the local market to demonstrate their technological capabilities to the entrepreneurs in the global market, especially in terms of production and standards (ibid.).

The combination of restrictions on congregation and movement, as well as the changes in business operations and consumer habits, have created a new normal in how consumers around the world access clothes. The COVID-19 pandemic has disrupted the traditional global textile and apparel value chain. This provides the entrepreneurs in the local market with the opportunity to showcase their technological capabilities on a regional and global scale.

**Final Recommendation**

The purpose of the research project was not to propose policies or procedures for the GOK to consider. Nevertheless, I would make one recommendation: reduce the import tax on materials. Almost all of the interviewees commented on the import tax in one form or another and contended that the import tax was much more destructive than constructive. The most common conversation centered on the lack of access to textiles and accessories in the local market. In addition, the participants in the surveys identified the import tax as one of the three biggest constraints to their businesses.

Thus, I recommend that the GOK reduce the import tax from 25 to 15 percent on resources that are not produced in the local textile and apparel sector, such as certain synthetic fabrics and silk. I recognize that this is a contentious debate. Antoinette Tesha is the Director of the Textiles and Apparel Sector at Msingi East Africa. She explains,
There is a huge argument, and it is a push and pull constant between allowing, putting zero tariffs on all fabric, so that the likes of the guys in the market and the designers can get access to cheap fabric, verses protecting the domestic industry, so that they can grow and not have cheap imports. That is the biggest argument on the table. (Antoinette Tesha, Interview, 26 March 2020).

The choice is between protecting the textiles mills or promoting the entrepreneurs in the local market.

On one side of the argument, the government is striving to protect the local textile mills with an import tax. Hezekiah Bunde Okeyo is the Industrialization Secretary for the Department for Industrialization Ministry of Industry, Trade, and Cooperatives. He asserts that:

We [the government] want local fabrics to be utilized. Once we open that window again, let us import fabrics, then we have killed the farmers, we have killed the textile mills, we have killed the ginneries, and we have killed the country. The policy is, use the local raw materials, including fabrics, and those industries will give you yarn. (Hezekiah Bunde Okeyo, Simon Mwombe, Group Interview, 26 February 2020).

A Senior Official at the Industrialization Ministry of Industry, Trade, and Cooperatives adds, “We are trying to ensure that as much as possible of that value chain remains in the country, but it will take a while for us to grow sufficient cotton, to grow sufficient silk” (Name Withheld). The import tax is a form of protectionism.

On the other side of the argument, the local textile mills concentrate on the production of cotton and cotton-based products. This means that the entrepreneurs cannot source materials other than cotton in the local market. While the government has announced plans to produce other textiles, such as “Delhi silk,” there is no time frame in place (Hezekiah Bunde Okeyo, Simon Mwombe, Group Interview, 26 February 2020). Nzisa Liku is the Owner of Vika Apparel. She explains, “We have not got those things even running yet. They are not even running yet, they are not even producing anything yet,
you cannot already be hitting us with taxes, it is pre-emptive” (Nzisa Liku, Interview, 5 March 2020). She adds that it is impossible for the textile mills to “make everything” (ibid.). Thus, the entrepreneurs have little but no choice but to secure the means to meet the 20 to 25 percent import tax, or source otherwise unattainable materials at the second-hand clothes market or from the EPZs, in order to enter and be competitive in the local market.

While the entrepreneurs achieve at least a basic level of technological capabilities in sourcing inputs and time via engaging with the global textile and apparel value chain, a reduced import tax rate could provide opportunities for the entrepreneurs to achieve an intermediate to advanced level of technological capabilities. The entrepreneurs could secure the monetary means to establish relationships with suppliers to source the resources not produced in the local market. It is important to continue the conversation on lowering the import tax on intermediate materials. I believe that there is a comprise to be made between protecting the local textile mills and serving the local entrepreneurs.

“I am very hopeful…it is time for us to position ourselves, and looking at what things are happening, things are shifting, so production is more, we need to really, really be ready for the next steps. But we are in the right direction. Right direction” (Connie Aluoch, Akinyi Odongo, Group Interview, 22 October 2020).
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### Appendix I: Mombasa Interviewees

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<th>No.</th>
<th>Name</th>
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<tr>
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| 30   | Lillian and Rose     | Lillian – Head of the Hospitality Department at the Kenya Coast National Polytechnic  
Rose – Head of the Clothing and Fashion Section at the Kenya Coast National Polytechnic | 9-Oct-19 | Group Interview |
<p>| 31.1 | Idris                | Fundi on Mwembe Tayari Street                                        | 12-Oct-19| Interview   |
| 31.2 | Idris                | Fundi on Mwembe Tayari Street                                        | 13-Oct-19| Interview   |
| 31.3 | Idris                | Fundi on Mwembe Tayari Street                                        | 15-Oct-19| Interview   |</p>
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Appendix II: Nairobi Interviewees

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<tr>
<td>15</td>
<td>Waithĩra Mwangi</td>
<td>Founder and Director of the Ithira, Sarit Centre</td>
<td>20-Feb-20</td>
<td>Interview</td>
</tr>
</tbody>
</table>
| 16  | Keith, Eric, Seraphine, Maria, Rona, and Thomas | Keith – Research Officer at the Kenya National Examinations Council  
Eric – Senior Exam Officer at the Kenya National Examinations Council  
Seraphine – Test Developer at the Kenya National Examinations Council  
Maria – Test Developer at the Kenya National Examinations Council  
Rona – Research Officer at the Kenya National Examinations Council  
Thomas – Administer of Exams at the Kenya National Examinations Council | 21-Feb-20 | Group Interview |
<p>| 17  | Elizabeth                   | Student at Delight Tailoring and Fashion Design School | 21-Feb-20   | Interview  |
| 18  | Steven                      | Finance Officer at VIVO, Spectrum Business Park | 24-Feb-20   | Interview  |
| 19  | Wandia Gichuru              | Co-Founder and CEO of VIVO, Spectrum Business Park | 24-Feb-20   | Interview  |</p>
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<td>Jared Ocholla</td>
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<td>Head of Production at VIVO, Spectrum Business Park Warehouse</td>
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<td>21</td>
<td>Hezekiah Bunde Okeyo and Simon (Afebe) Mwombe</td>
<td>26-Feb-20</td>
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<td></td>
<td>Okeyo – Industrialization Secretary at the Industrialization Ministry of Industry, Trade, and Cooperatives</td>
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<td></td>
<td>Mwombe – Deputy County Director and Acting Director of Agriculture at the Ministry of Agriculture</td>
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<td>22</td>
<td>Ann McCreath, Akinyi Odongo, Wakiuru Njuguna, Sandra Chege, and Lucy Rao</td>
<td>26-Feb-20</td>
<td>Group Interview</td>
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<tr>
<td></td>
<td>Ann McCreath – Fashion Consultant at the International Trade Centre, and Founder and Chairman of the Festival of African Fashion and Arts</td>
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<td></td>
<td>Akinyi Odongo – Executive Board Chair on the Kenya Fashion Council and Head Fashion Designer at MEFA Creations</td>
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<td></td>
<td>Wakiuru Njuguna – Investment Manager at HEVA Fund</td>
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<td></td>
<td>Sandra Chege – Arts and Communication Manager at the British Council (Kenya)</td>
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<td></td>
<td>Lucy Rao – Owner of Rialto Fashions</td>
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<td>23</td>
<td>Ligia Noronha</td>
<td>27-Feb-20</td>
<td>Interview</td>
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<td></td>
<td>Director of the Economy Division at the United Nations Environment Programme</td>
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<td>24</td>
<td>Linda Murithi</td>
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<tr>
<td></td>
<td>Founder and CEO of the Core Fashion Kenya</td>
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<tr>
<td></td>
<td>Name</td>
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<tr>
<td>25</td>
<td>Andrew Bamugye</td>
<td>Senior Investment Manager SME at the Trade and Development Bank</td>
<td>27-Feb-20</td>
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<tr>
<td>26</td>
<td>Leah Njogu</td>
<td>Representative at the Kenya Revenue Authority</td>
<td>27-Feb-20</td>
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<td>27</td>
<td>Jason Musyoka</td>
<td>Director of the Viktoria Business Angel Network at Viktoria Ventures</td>
<td>27-Feb-20</td>
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<td>28</td>
<td>Faith</td>
<td>Customer Service Supervisor at Family Bank, Westlands</td>
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<td>Linda Murithi et. al.</td>
<td>Founder and CEO of the Core Fashion Kenya</td>
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<td>30</td>
<td>Beatrice</td>
<td>Tailor at the Amani Training Institute</td>
<td>2-Mar-20</td>
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<td>31</td>
<td>Maria Waithera</td>
<td>Dean of Students at Mcensal School of Fashion Design</td>
<td>3-Mar-20</td>
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<td>32</td>
<td>Hezekiah Bunde Okeyo</td>
<td>Industrialization Secretary at the Industrialization Ministry of Industry, Trade, and Cooperatives</td>
<td>4-Mar-20</td>
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<td>33</td>
<td>Daisy Chesang</td>
<td>Programmes and Operations Lead at Mettā Africa</td>
<td>5-Mar-20</td>
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<tr>
<td>34</td>
<td>Nzisa Liku</td>
<td>Former Technical Account Manager at Access Mobile International and Owner of Vika Apparel</td>
<td>5-Mar-20</td>
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<tr>
<td>No.</td>
<td>Name</td>
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<tr>
<td>35</td>
<td>Krupa Mandavia</td>
<td>Co-Founder of IKKIVI, and Member of the Trade and Law Committee, the Kenya Fashion Council</td>
<td>6-Mar-20</td>
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<td>36</td>
<td>Bettina Heller</td>
<td>Associate Programme Officer at the United Nations Environment Programme</td>
<td>6-Mar-20</td>
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</table>
| 37  | Tobias Oswagoo and Peter Awino | Tobias Oswagoo – Chair of the Association of Kenyan Tailors  
Peter Awino – Secretary of the Association of Kenyan Tailors | 9-Mar-20 | Group Interview |
| 38  | Evelyn Noah                 | Promotion Executive at the Export Processing Zones Authority, Machakos, Athi River | 9-Mar-20 | Interview   |
| 39  | Nyacomba 'Jonas' Githu      | Co-Founder of Free Minds                                                      | 10-Mar-20| Interview   |
| 40  | Koome Arnold                | Operations and Business Development Executive at Riera-Tex Ltd., Kirinyaga Road | 11-Mar-20| Interview   |
| 41  | Morrice Oduor and Marion Malika | Morrice Oduor – Sample Manager at Frederick Bittiner  
Marion Malika – Marketing and Public Relations Specialist at Frederick Bittiner | 12-Mar-20| Group Interview |
| 42  | Name Withheld               | Senior Official at the Industrialization Ministry of Industry, Trade, and Cooperatives | 12-Mar-20| Interview   |
| 43  | Madhu Shah and Sagar Shah   | Madhu Shah – Co-Founder and Managing Director of Alpha Knits Ltd., Ruiru Town  
Sagar Shah – Manager at Alpha Knits Ltd., Ruiru Town | 13-Mar-20| Group Interview |
<p>| 44  | Isaac Maluki                | CEO and Founder of Shona EPZ Ltd.                                              | 16-Mar-20| Interview   |</p>
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<td>45</td>
<td>Sevda Bilen</td>
<td>Kenya Area Manager at LC Waikiki</td>
<td>17-Mar-20</td>
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<td>46</td>
<td>Geoffrey</td>
<td>Geoffrey Karanja – Principal of Evelyn College of Design</td>
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<td></td>
<td>Karanja,</td>
<td>Marietta – Instructor of Interior Design at Evelyn College of Design</td>
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<td></td>
<td>Marietta,</td>
<td>Sewe – Examiner at Evelyn College of Design</td>
<td>17-Mar-20</td>
<td>Group Interview</td>
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<td></td>
<td>and Sewe</td>
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<td>47</td>
<td>Glena Jiwani</td>
<td>Owner of Made in Kenya</td>
<td>18-Mar-20</td>
<td>Interview</td>
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<td>48</td>
<td>Mercy</td>
<td>Fashion Design Student at the University of Nairobi</td>
<td>18-Mar-20</td>
<td>Interview</td>
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<td>49</td>
<td>Mehul Shah</td>
<td>Mehul Shah – Director at Omega Apparels Limited, Gilgil Industrial Park</td>
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<td></td>
<td>and Alice</td>
<td>Alice – Human Resource Specialist at Omega Apparels Limited, Gilgil Industrial Park</td>
<td>18-Mar-20</td>
<td>Group Interview</td>
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<td>50</td>
<td>Peter Awino</td>
<td>Owner of Kaf Kaf, and Secretary of the Association of Kenyan Tailors</td>
<td>19-Mar-20</td>
<td>Group Interview</td>
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<td>et. al.</td>
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<tr>
<td>51</td>
<td>Eileen</td>
<td>Head of the Garments Section and Industrial Training Officer at the National Industrial Training Authority, Textile Training Institute</td>
<td>19-Mar-20</td>
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<td></td>
<td>Nguthari</td>
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<td>52</td>
<td>Val Adhiambo</td>
<td>Fashion Design Student at the University of Nairobi</td>
<td>20-Mar-20</td>
<td>Interview</td>
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## Appendix III: Virtual Interviewees

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<tr>
<th>No.</th>
<th>Name</th>
<th>Role(s)</th>
<th>Date</th>
<th>Interview Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jesse Kang’ethe and Nehemia Kabugi</td>
<td>Jesse Kang’ethe – Administrator at HEVA Fund  &lt;br&gt; Nehemia Kabugi – Financial Analyst at HEVA Fund</td>
<td>24-Mar-20</td>
<td>Group Interview; Skype</td>
</tr>
<tr>
<td>2</td>
<td>Andrew Bamugye</td>
<td>Senior Investment Manager SME at the Trade and Development Bank</td>
<td>25-Mar-20</td>
<td>Interview; Microsoft Teams</td>
</tr>
<tr>
<td>3</td>
<td>Antoinette Tesha</td>
<td>Director of the Textiles and Apparel Sector at Msingi East Africa</td>
<td>26-Mar-20</td>
<td>Interview; Skype</td>
</tr>
<tr>
<td>4</td>
<td>Dr. Osawa Otta</td>
<td>Deputy Director at the Technical and Vocational Education and Training Authority</td>
<td>26-Mar-20</td>
<td>Interview; WhatsApp and Skype</td>
</tr>
<tr>
<td>5</td>
<td>Sandra Chege</td>
<td>Arts and Communication Manager at the British Council Kenya</td>
<td>9-Apr-20</td>
<td>Interview; Google Chats and WhatsApp</td>
</tr>
<tr>
<td>6</td>
<td>Ria Ana Sejpal</td>
<td>Founder and Creative Director of Lilabare</td>
<td>21-Apr-20</td>
<td>Interview; WhatsApp</td>
</tr>
<tr>
<td>7</td>
<td>Janet</td>
<td>Co-Owner of Jokajok</td>
<td>27-Apr-20</td>
<td>Interview; Email</td>
</tr>
<tr>
<td>8</td>
<td>Dr. Juliet Isika</td>
<td>Lecturer at the Department of Fashion Design and Marketing, Kenyatta University</td>
<td>15-Jun-20</td>
<td>Interview; Email</td>
</tr>
<tr>
<td>9</td>
<td>Silas Otwala</td>
<td>National Treasurer at the Tailors and Textiles Workers Union</td>
<td>12-Aug-20</td>
<td>Interview; Email</td>
</tr>
<tr>
<td>10</td>
<td>Connie Aluoch</td>
<td>Founder of Connie Aluoch Styling Management</td>
<td>7-Oct-20</td>
<td>Interview; Zoom</td>
</tr>
</tbody>
</table>
| 11 | Connie Aluoch and Akinyi Odongo | Connie Aluoch – Founder of Connie Aluoch Styling Management
Akinyi Odongo – Executive Board Chair at the Kenya Fashion Council and Head Fashion Designer at MEFA Creations | 22-Oct-20 | Group Interview; Instagram |
Appendix IV: Kongowea Market Survey

Section A: Background Information

1. Date: ...................................................................................................................................................................................................................................................
2. Name: ...................................................................................................................................................................................................................................................
3. Male/Female: ..............................................................................................................................................................................................................
4. Age/Year of Birth: ........................................................................................................................................................................................................
5. Place of Birth: ...........................................................................................................................................................................................................
6. Marital Status:
   a. Single
   b. Married
   c. Divorce
   d. Widowed
   a. Other, specify ........................................................................................................................................................................................................
7. Education level:
   a. No Formal Education
   b. Lower Primary Education
   c. Upper Primary Education
   d. Lower Secondary
   e. Upper Secondary
   f. University
   g. Vocational Training
8. Did you receive any form of training?
   Formal: Yes or No
   Informal: Yes or No

Section B: Business Operations

9. Job Title: ..........................................................................................................................................................................................................
10. Type of business/activity: .................................................................................................................................................................................................
11. Full time or Part time: ................................................................................................................................................................................................
12. What days do you work? Select all that apply.
   a) Sunday
   b) Monday
   c) Tuesday
   d) Wednesday
   e) Thursday
   f) Friday
   g) Saturday
13. Name of Business: .....................................................................................................................................................................................................
14. Location of Business: ...................................................................................................................................................................................................
15. Year of Establishment: ....................................................................................................................................................................................................
16. Number of Employees: ................................................................................................................................................................................................
17. Do you own your business?
   Yes
   No
A: Elezea Kuhusu Wewe Mwenyewe

1. Tarehe: ……………………………………………………………………………………………………………………………………………………………
2. Jina: ... Idadi ya Waajiriwa: …………………………………………………………………………………………………………………………………………
17. Je! Biashara hii ni yako? 
Ndio 
La

B: Shughuli za Biashara

9. Jina la kazi: ……………………………………………………………………………………………………………………………………………………………
10. Aina ya biashara/shughuli: …………………………………………………………………………………………………………………………………
11. Wakati wote au Sehemu ya wakat wote: ……………………………………………………………………………………………………………
   a) Jumapili
   b) Jumatatu
   c) Jumanne
   d) Jumatano
   e) Alhamisi
   f) Ijumaa
   g) Jumamosi
13. Jina la Biashara: ……………………………………………………………………………………………………………………………………………………………
14. Mahali pa Biashara: …………………………………………………………………………………………………………………………………
15. Mwaka wa Kuaniishwa: ………………………………………………………………………………………………………………………………………
16. Idadi ya Waajiriwa: ………………………………………………………………………………………………………………………………………
17. Je! Biashara hii ni yako?
Ndio
La
Appendix V: Center of Nairobi Textiles Survey

The Association of Kenyan Tailors

1. What is your gender identity?
   a. Woman
   b. Man
   c. Genderqueer or Non-Binary
   d. Agender
   e. Other (please specify) ...........................................................................................................................

2. What is your age?
   a. 18 to 24
   b. 25 to 34
   c. 35 to 44
   d. 45 to 54
   e. 55 to 64
   f. 65 to 74
   g. 75 or older

3. What is your ethnicity? Please select all that apply.
   a. Kikuyu
   b. Luo
   c. Luhya
   d. Kamba
   e. Kalenjin
   f. Maasai
   g. Other (please specify) ...........................................................................................................................

4. At which location do you work? ...............................................................................................................

5. In a typical month, how much money, in Kenyan shillings, do you make? ...........................................

6. Where did you learn to stitch? Select all that apply.
   a. Family or Friends
   b. Lower Primary School
   c. Upper Primary School
   d. Lower Secondary School
   e. College
   f. Technical or Vocational Training Institute
   g. Attachment or Internship
   h. Work Shadowing
   i. EPZ Training
   a. Other, (please specify) ..........................................................................................................................

7. Do you have any of the following certificates? Select all that apply.
   a. NITA
   b. KNEC
   c. TVET
   d. Other, (please specify) ..........................................................................................................................

8. What are the top 3 challenges impacting your business? ....................................................................... 

9. Do you support the proposal to ban second-hand clothes (mitumba)? Why or why not? ......................