

## **Leather and textile industries-strategic sectors for Ethiopia to gain capability of manufacturing for global market competitiveness: A literature review**

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### **ABSTRACT**

Leather and textile industries have a vital role of transforming countries into industrialization-manufacturing led economy. There has been a focus on these industries in Ethiopia to bring manufacturing capability which can be scaled up in the future to produce other value-added products for global markets. However, there is lack of organized scientific information about the actions taken by the government to develop the industries, what the achievements are, and the challenges of the medium and large-scale manufacturing firms in the leather and textile industries. Therefore, the objective of this paper was to synthesize the available scientific and other reliable information by employing a qualitative systematic review method and come up with a new insight. Guided by the thematic literature synthesizing technique, this paper found that the medium and large-scale manufacturing firms in the leather and textile industries have penetrated the global market by improving the quality of products and increasing the quantity of production, although they have faced severe challenges to operate as per their design capacity mainly due to problems related to inputs. The paper presents the strategies implemented to stimulate the manufacture of leather and textile products, the performance improvement practices, the achievements, and challenges of the manufacturing firms in the leather and textile industries. Besides, it identified the existing gaps and the future lines of work.

**Keywords:** Leather manufacturing; textile manufacturing; manufacturing strategy; Ethiopia.

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## INTRODUCTION

According to the report of the McKinsey Global Institute (2012), manufacturing plays a crucial role in innovation, development and improvement of the living standards of human beings. However, it is not easy to build a strong and competent manufacturing capability that ensures long-term development. Although the textile and leather industries are considered subcategories of the manufacturing industry, they have contributed to the growth of other manufacturing sectors in many developed countries (MoI, 2016a). The low technological barriers and high cross-sectoral linkage of these two sectors facilitate an easy entry into the business while providing more employment (MoI, 2016a). Moreover, they have a growing demand because they produce goods for basic human needs albeit they are old and less tech industries. Hence, they produce the most traded goods in the global market that enables them to generate huge revenue. For instance, the global textile market was valued at  $\approx$ USD 856 billion in 2018 and is expected to generate around USD 1,207 billion by 2025 (ZMR, 2019). Similarly, the global leather goods market size was valued at USD 404 billion in 2017 (GVR, 2019) and is expected to reach USD 610 billion by 2025 (GVR, 2019).

Furthermore, the textile and leather industries have a migratory characteristic unlike other sectors (MacCarthy et al., 2016). Such characteristics have played the advantage of spreading industrialization across the globe. So far, they have migrated to the Far East – Asia - Japan in the 1960s and China in the early 2000s since they have already flourished in the Western countries during the first industrial revolution itself (Bart et al., 2016). The ever-increasing manufacturing cost has been the key driver for this migration (Adegoke, 2017; Yuan Sun, 2017). The migration of textile and garment industries into Africa could also be possible as far as the recently observed high labor cost in China continues (Yuan Sun, 2017).

Ethiopia, one of the African countries, has immense potential for basic raw materials such as cotton, skins, and hides for textile and leather industries and it is in the list of the top 30 world cotton producer countries (Index Mundi, 2020). Yet, it has the potential to be the second-largest world cotton producer country-an estimation obtained by multiplying three million hectares of land conducive for cotton production by the average cotton yield per hectare (EEB, 2018). Similarly, it has a high potential for raw material for leather industries due to its vast animal resources. As per the 2015 World Food and Agriculture Organization's report, it is the first in Africa and the fifth county in the World for its cattle inventory (FAO, 2015). It is the largest raw material supplier of Africa's leather industry (EEB,

2015). The size and characteristic of its population is also another factor particularly for textile and leather industries due to their labor-intensive nature. Based on United Nations' Economic Department data and prediction model, about 65% of 110 million Ethiopia's population which is under 30 years of age (UNDESA, 2019) is growing at a rate of 3.2%. This gives both a pool of active labor force and considerable size of the consumer market. The geographical location of Ethiopia itself can also be another advantage because of the fact that it is fairly equidistant between the United States and Japan, between China and Brazil, between Europe and India, and between Russia and South Africa (Assefa et al., 2013). This would mean that a manufacturing firm in Ethiopia will be located at the center of the industrialized and emerging countries so that it can easily access the global markets. This can also assist in reducing manufacturing and marketing costs.

In spite of the above advantages and opportunities, the leather and textile industries in Ethiopia has not advanced beyond exporting their products after adding minimum value and remained as a supplier of raw materials only, an activity which could not take a country anywhere (McKinsey Global Institute, 2012). The country has devised a "*low-cost manufacturing destination strategy*" to bring a radical change in the manufacturing capability of the country as of 2010 (MoTI, 2010; NPC, 2010; MoI, 2016b; NPC, 2016). The government of Ethiopia has decided to build the manufacturing capability that enables to supply value added products to the global market (MoTI, 2010; NPC, 2010). So far, the government has implemented the strategy by focusing on the manufacture of leather and textile products so that the experience gained can be extended to other high-tech products in the future. Eventually, the manufacturing industry in Ethiopia is expected to have considerable share in the economy of the country and ensure a structural change with a shift from agriculture-led economy to the industry-led economy (Arkebe Oqubay, 2018).

To implement this strategy, various pioneering activities have been initiated since 2010 (UNDP, 2018) such as the construction of hydroelectric dams, industrial parks, electric driven railways, etc., that create a conducive environment for manufacturing, improve the performance of firms in general and increase the volume of production of leather and textile manufacturing firms, in particular. The manufacturing progress in Ethiopia has caught up the global media attention creating main stream debate on "*Could Ethiopia Become Africa's Manufacturing Hub?*" (Front era, 2015; Wright, 2016; BBC, 2017; EG and UNIDO, 2018).

However, the available research information about the manufacturing development in Ethiopia is scattered across different disciplines. This has created the limitation

of understanding the promises and challenges of the manufacturing firms in an organized manner. Therefore, the aim of this paper was to review the available literature related to medium and large-scale manufacturing firms in the leather and textile industries in Ethiopia. Qualitative systematic review (QSR) method was employed to achieve the objective of this study because of its flexibility and fitness to analyze a large and comprehensive data. Usually, QSR method assists to aggregate/integrate the works of individual researchers by employing a thematic literature review technique. In general, the literature review plays a decisive role in research as it reflects the cumulative contribution of knowledge of various researchers (Vom Brocke et al., 2009). Hence, this review contributes to the body of knowledge in the manufacturing arena by aggregating the research information and identifying the future line of work.

## **LITERATURE REVIEW METHOD**

The information for this study has been collected from diverse disciplines including management, engineering and manufacturing through internet. Specific search strings like manufacturing strategy, performance improvement, energy and logistical infrastructures, leather and textile industries, industrial park development with the suffix 'in Ethiopia' have been used to search the required information. Initially, 240 publications were collected from known search engines such as Google Scholar, ResearchGate, Web of Science, ScienceDirect, Inderscience, Springer and other related sources. Among those publications the scientific articles, reports, magazine news, journal news and press releases were sorted for the next screening process. Following the screening criteria, 210 publications were retained by filtering the set of information against their relevance to the medium and large-scale manufacturing firms in the leather and textile industries in Ethiopia. Moreover, the Ethiopian Central Statistical Agency (ECSA) classification has been used for classifying the manufacturing firms. Then, the sources that focused purely on investment and finance were excluded from this set. With this additional restriction, the number was reduced to 82. Finally, the data was filtered using time (as of 2003) to increase the quality of the review. With this limit the number was further reduced to 63. Full bibliographic details of the 63 articles selected for the analysis are shown in the references.

This research employs a qualitative systematic review (QSR) method. The QSR method aggregates, integrates, and/or interprets the findings from usually known qualitative studies (Sandelowski and Barroso, 2007). Qualitative systematic review uses a thematic analysis technique for data analysis techniques. The thematic analysis is a useful method for examining the perspectives of different research participants, highlighting similarities and differences, and generating unanticipated

insights (King, 2004; Braun and Clarke, 2006). This technique is also useful for summarizing key features of a large data set, as it forces the researcher to take a well-structured approach in handling data, which helps in producing a clear and organized final report (King, 2004). The thematic analysis also provides a highly flexible approach that can be modified for the needs of many other studies (King, 2004; Braun and Clarke, 2006). Therefore, this paper is a synthesis/ an aggregate of the data under the following themes: strategy to stimulate manufacturing; the practices of manufacturing performance improvement; and achievements and challenges of leather and textile industries. The sub elements in the main theme are also set by the thematic review technique.

## **STRATEGY OF STIMULATING MANUFACTURING IN ETHIOPIA**

Modern manufacturing in Ethiopia dates back to the 1930s, which is after 100 years of the end of the first industrial revolution (Altenburg, 2010; Gebreeyesus Mulu, 2016). However, the manufacturing activity is dominated only by food and beverage processing industries for domestic consumption (AACCSA, 2014; Amare Mitiku and Raju, 2015; CSA, 2015). As a consequence, the country used to export the available resource at cheaper prices and buy finished products at expensive prices (Gebreeyesus, 2016). The export of pickled pet which is the first stage of processed skin/hide is the first product that was offered by Ethiopia for the international market in 1986 (Altenburg, 2010). The nationalization process of medium and large- scale manufacturing firms by the government from mid- 1970s to the early 1990s is assumed to be one of the major problems that frustrated the Ethiopian manufacturing industry (Altenburg, 2010; Gebreeyesus Mulu, 2016; Arkebe Oqubay, 2018). The manufacturing firms were privatized following the change of regime and political ideology that evolved in the early 1990s (Altenburg, 2010; Gebreeyesus Mulu, 2016). The privatization of manufacturing firms was part and parcel of the broader economic reforms taken up in the country (Gebreeyesus Mulu, 2016). These reforms led to a considerable economic growth in the early 2000s (EJE, 2008a; Arkebe Oqubay, 2015), although the privatization process of firms was criticized for its lack of transparency (Altenburg, 2010; Front era, 2015).

The initial stage of the economic development achieved after privatization has motivated the government in Ethiopia to formulate an export-oriented manufacturing policy (Arkebe Oqubay, 2018). The policy could place Ethiopia as one of the few African countries that have a clear manufacturing policy (Mulu Gebreeyesus, 2016; Arkebe Oqubay, 2018). After that, local firms that produced end products such as footwear and garment for the international market boomed

(Altenburg, 2010). Yet, the volume of production of the firms was small and the quality was not satisfactory (Altenburg, 2010; Mines Paris Tech, 2016).

The above progress was extended by formulating a strategy that enhanced the manufacturing capability of the country. Textile and leather products were identified as strategically important products to build the manufacturing capability of Ethiopia (MoTI, 2010; NPC, 2010; MoI, 2016a; NPC, 2016). Initially, the country needs to manufacture value-added textile and leather products on a large scale for the global market (NPC, 2010). The experience to be gained can be scaled up in the future to manufacture high-tech products. The “low-cost manufacturing destination” that has been envisaged as the manufacturing model of Ethiopia was expected to create strong leather and textile industries (MoI, 2016a; NPC, 2016). The target of this model was to keep down manufacturing cost lower than anywhere else.

Cheap electric energy, ‘plug-and-play’ manufacturing facilities, improved logistical infrastructures, lucrative incentives, labor cost and locally available raw materials have been identified as variables for the selected manufacturing model (NPC, 2010; Hauge and Ifran, 2017; Haraguchi et al., 2019). For instance, the export of raw materials was restricted by law to secure the availability of raw materials for firms residing in Ethiopia. This resulted in lower cost of raw materials compared to that imported from abroad. Besides, exporting semi-processed products, especially in the leather industry at the stages of pickled pet, wet blue and crust, has been discouraged by imposing a high tax rate, as high as 150% (Wegayehu Fitawek, 2016) that eventually increases the availability of materials for manufacturing firms that further process these outputs. The manufacturing policy of Ethiopia has introduced another practice, i.e., rewarding firms that export a high volume of products for the global market (NPC, 2010; NPC, 2016). This has the disadvantage of exporting intermediaries, for instance, finished leather that can be used as input by the manufacturing firms residing in Ethiopia. The labor cost is another variable that affects the manufacturing model positively. Hence, the Ethiopian government intentionally keeps the labor cost as low as possible, although there is a strong critic from International Labor Organization (ILO) and other organizations (AGOA, 2014). Others view this positively and justify that reputed foreign manufactures invest in Ethiopia because of the low labor cost (Adegoke, 2017; Yuan Sun, 2017). The government also encourages manufacturing by supplying electric energy at low cost and readymade manufacturing facilities.

### ***Supply of electric energy at low cost for manufacturing firms***

Studies indicate that Ethiopia has around 12 rivers while 7 of them have trans-boundaries (Desalegn Worku, 2018) and the country has the potential of generating up to 45,000 MW from hydropower (EJE, 2008b; CDKN, 2017). Developing this potential has been considered as one of the means to make Ethiopia the destination of low-cost manufacturing country (NPC, 2016). The intention of the government was to motivate and attract the manufacturing firms by supplying electric energy at low cost although huge capital is invested in the process. According to UNDP report (2018), the country has invested \$21.3 billion on power stations, railway, roads and telecommunications infrastructure during GTP-I. The effort exerted to utilize the existing water potential for energy production seems to be visible and sound.

The Gilgel Gibe III (1,870 MW), Genale-Dawa III (254 MW), Koysha (2,160 MW) and Grand Ethiopian Renaissance Dam (6,540 MW) hydroelectric power stations are the main hydro power projects started during GTP-I and GTP-II to achieve the objective of supplying low-cost electric energy for manufacturing firms in Ethiopia (NPC, 2010; NPC, 2016). Besides, the country has built Gibe-I (184 MW), Tekeze (300 MW), Gilgel Gibe-II (420 MW) and Tana Beles (460 MW) before the launch of GTP-I (EJE, 2008b). However, the construction of key hydroelectric projects like Koysha and the Grand Ethiopian Renaissance Dam are delayed. Yet, the country is supplying the cheapest electricity at \$0.05 per kilowatt hour (KWH) for manufacturing firms compared to the low-cost tariff countries such as India (0.1), Pakistan (0.08) and Turkey (0.1) (GE, 2015).

Logistical infrastructure development with relevance to manufacturing activities has also been carried out to reduce the cost of material transportation and delivery time. For instance, a railway stretch line covering 2,385 km was planned during GTP-I (EG and UNIDO, 2018). So far, the electrified railway of 680 km connecting Addis Ababa to the port of Djibouti has been accomplished and became operational in the middle of 2018 (UNDP, 2018). Dry ports have also been established to facilitate transportation and storage of materials considering that the country is land-locked. According to the study of Japan International Cooperative Agency (JICA) on the corridor of Djibouti, Ethiopia has built seven dry ports until 2018 (JICA, 2018). All these can be considered as elements of the broader physical activities carried out to realize the low-cost manufacturing destination envisaged in the country.

### ***Industrial parks- ‘plug-and-play’ manufacturing facilities in Ethiopia***

To stimulate the manufacturing sector, the efforts of the Ethiopian government are not limited to the above activities alone but were extended to the construction of industrial parks which are the ‘*plug-and-play*’ manufacturing facilities (Fekadu Wubete, 2017). Industrial parks and special economic zones are new experiences for Ethiopia albeit they are old and common practices both in developed and developing countries (EE, 2015; Ethiopian Herald, 2018). Hence, the government has set up the Ethiopian Industrial Parks Corporation in 2014 to facilitate the construction of industrial parks (Bayrau, 2017). At this time, the industrial parks are being built at strategic places in the Eastern, Central, South-Western, North-Western, North-Eastern and Northern part of the country to facilitate industrialization across the country (Fekadu Wubete, 2017). Annex-A shows the locational information of industrial parks. As per the UNDP report, the country has put aside 1.3 billion US dollars for the construction of industrial parks during GTP-II period (EG and UNIDO, 2018). Based on the existing studies, the industrial parks constructed in Ethiopia are unique; they have been customized from the Asian and European experiences in the manner to address its own demand (Ohno, 2017). The ‘*plug-and-play*’ type facilities are the largest and modern manufacturing places in Africa (Fekadu Wubete, 2017). The report of Japanese experts on Hawasa Industrial Park (HIP) located in Southern Ethiopia highlights its modernity (Ohno, 2017), which has state-of-the art amenities with zero waste discharge. The HIP has started its operation in 2017 while other parks were in the process to enter into production at the time of this study (Fekadu Wubete, 2017). In addition, six more private industrial parks, viz., Eastern Industrial Park, Haujian, CCECC, George shoe, Velocity and CCCC have been built at the suburb of Addis Ababa (GE, 2018). Furthermore, the Integrated Agro Processing Parks (IAPPs) have been designed for implementation to couple the manufacturing and agriculture sectors (GE, 2018). Four IAPPs were under construction at the time this study.

### **PRACTICES OF MAUFACTRUIG PERFORMANCE IMPROVEMENT**

As stated in the above sections, the economy of Ethiopia was denationalized in the early 1990s. Hence, it is nearly three decades since the medium and large-scale manufacturing firms have been privatized, although the state still holds selected sectors. This implies that today’s domestic manufacturers have the experience of manufacturing for not more than 30 years. This might be one of the reasons why the government involves actively in the performance improvement of the manufacturing firms in addition to creating the enabling manufacturing



environment. The government implemented various techniques and tools to improve manufacturing, as discussed below.

Business Process Reengineering (BPR) was one of the noticeable performance improvement tools implemented in Ethiopia after denationalization. This has been implemented since the early 2000s at the national level by setting up a new ministerial office named the Ministry of Capacity Building (MCB) (Tesfaye Debela, 2009). However, the office was dissolved in 2011 even though BPR is still in implementation by different organizations (Altenburg, 2010). In addition to its political scheme, studies reveal that the BPR was not directly implemented by the manufacturing firms (Assefa Birhanu, 2009). Rather, it was implemented by key service organizations like the Ministry of Trade and Industry, Customs and Revenue Authority, and others which have an indirect effect on manufacturing firms in improving their performance. On the other hand, benchmarking and twining techniques were implemented by the manufacturing firms in Ethiopia on a pilot scale during the peak time of BPR implementation (Mulu Gebreeyesus, 2016). It is believed that these techniques have assisted the manufacturing firms in developing the concept of standardization (Altenburg, 2010).

State-owned entities that were established at different times to offer technical assistance in leather, textile, metal, and other industries were reorganized to support the performance improvement activities of the manufacturing firms (UNIDO, 2012). Accordingly, the current Leather Industry Development Institute (LIDI), Textile and Apparel Industry Development Institute (TAIDI) and Basic Metal Development Institutes (BMDI) were some of the institutions that evolved to motivate the performance improvement approaches, methods, tools and techniques relevant to respective sectors or subsectors (Altenburg, 2010; UNIDO, 2012). In addition to this, the manufacturing firms have attempted to exploit the experience of the external world through international organizations. For instance, the GIZ, formerly the GTZ has contributed in raising the concept of standardization especially in manufacturing and construction sectors (Altenburg, 2010). The United Nations Industrial Development Organization (UNIDO) had a direct/indirect role in the performance improvement of manufacturing firms in Ethiopia (UNIDO, 2012). Firstly, this organization has played the role of setting up LIDI, BMDI and TAIDI. Secondly, it worked with these local institutions to promote the performance improvement activities through training, advice and consultancy. The other way of tapping the experience of foreign firms is by attracting the firms to stay in Ethiopia as per the new manufacturing strategy (MoTI, 2010; MoI, 2016b; NPC, 2010; NPC, 2016). It is obvious that the local firms and employees will gain experience from the foreign manufacturing firms when they operate in Ethiopia and work together as a member of the

manufacturing supply chain. This can improve the performance of local manufacturing firms.

The government has also set up the Ethiopian Kaizen Institute (EKI) in 2011 to advance the philosophy of Kaizen across the manufacturing industries (Getahun Tadesse, 2018). The objective of Kaizen implementation was to reduce the cost of operation and bring an incremental improvement in quality of products. According to the institute's report, Kaizen is the most widely applied performance improvement method in Ethiopia both by manufacturing and service industries; there has been an attempt to introduce Kaizen in 461 organizations from 2015 to 2018 (Getahun Tadesse, 2018). Total Quality Management (TQM), Enterprise Resource Management and lean manufacturing are some of the other performance improving techniques implemented by few manufacturing firms (Daniel Kitaw and Fasika Bete, 2003; Fasika Bete Georgise et al., 2014; Young, 2016; Xinhua, 2018).

## **ACHIEVEMENTS IN THE LEATHER AND TEXTILE INDUSTRIES**

### ***Production capacity***

Ethiopia started exporting manufactured products only in small quantities before the launch of the new manufacturing development plan. The size and production capacity of manufacturing firms was one of the limiting factors. The government took various measures to stimulate the manufacturing industry by constructing huge industrial parks as well as creating enabling conditions for private companies to construct parks with a lot of privilege to supplement the short-fall. These actions improved the production capacity and volume of production in the leather and textile industries. For instance, the new facility of Anbessa shoe manufacturing which started operation in 2016 has a production capacity of 10,000 pairs per day (Young, 2016). This implies that the shoe production capacity of Anbessa, itself is 41% of the aggregate production capacity of the rest of the main, large, and medium-scale shoe manufacturing firms in 2012 (Annex B). Similarly, the Huajian Group, the Chinese based shoe manufacturer, which started operation in Ethiopia in 2011 with a production capacity of 3,000 pairs of shoes per day has expanded and reached a production capacity of over 5 million pairs of shoes per annum in 2017 (Bruk Tilahun, 2018). This would also mean that the daily production of Huajian Group is 81% of the aggregate production of the rest of the main large and medium scale shoe manufacturing firms in 2012 (Annex B).

The industrial parks have made a difference in the production capacity of manufacturing firms in Ethiopia. The Hawasa Industrial Park, which started its operation in 2017, could be taken as a good indicator for the change of production

capacity observed in Ethiopia after the manufacturing development plans have been launched. Hawasa Industrial Park has the largest garment production capacity in Ethiopia that is worth \$1 billion per annum (Fekadu Wubete, 2017). The total manufacturing export output of Ethiopia in 2015 was \$1.4 billion (Front era, 2015). Taking this as the developed capacity of the country just before the implementation of new manufacturing strategy, the design capacity of the Hawasa Industrial Park alone was 71% of the total manufacturing export output of the country registered in 2015.

The industrial parks built in Ethiopia could also be used as litmus test to compare the agriculture and manufacturing activities in the country. It is known that Ethiopia is the fifth top world coffee producing country and the coffee industry provides employment to around 15 million people, nearly 16% of the population (Belly, 2021). The country has earned \$ 916,973,000 from coffee sales in 2017/18 (GAIN Report, 2019). Thus, the annual revenue of coffee that is produced over a large part of the country is less than the potential revenue of a single manufacturing facility, the Hawasa Industrial Park. This demonstrates that the manufacturing activities could generate more income than the vast agricultural activity in the country. Hence, this experience can be used to further strengthen the manufacturing development in other sectors.

### ***Product quality and cost of operation***

The policy change made in Ethiopia attracted the manufactures initially from China, Turkey and India. As a consequence, many local firms were on the verge of crash from competition from Chinese products (Altenburg, 2010; Mines Paris Tech, 2016). Hence, the local manufacturers have reacted aggressively to overcome the competition. Innovation was one of the measures they took. Studies reveal that 78% of the textile and leather manufacturing firms have introduced innovations to increase the product quality in three years from 2013 to 2016 (Koleros and Attfiled, 2017). During this period, 83% of the tanneries have taken measures to cope with the competitive markets (Koleros and Attfiled, 2017). The investment measures taken in production technology by manufacturing firms especially in shoe factories is considered as one of the factors that led to quality improvement in Ethiopia (Mines Paris Tech, 2016). Also, the implementation of performance improvement tools like Kaizen has helped reduce costs and improve quality. A study conducted on 48 manufacturing firms that implemented Kaizen showed that defects in products were substantially reduced (range: 5% to 57%), cost of production reduced (6% to 33%) (Getahun Tadesse, 2018). These changes were achieved in a short time after implementing Kaizen, i.e., in three months.

### ***Labor productivity***

Labor cost is one of the key elements duly emphasized to realize the “*low-cost manufacturing destination*” strategy in Ethiopia (EEB, 2018). The report by Harvard Business Review indicates that the confidence of foreign manufacturing firms in Ethiopia relies on labor cost (Yuan Sun, 2017). Its importance is worth in leather, textile and apparel industries due to their labor-intensive characteristics (McKinney Global Institute, 2012). However, the low cost of labor is not a guarantee for manufacturers to be competitive. Rather, the level of productivity is very important. Unfortunately, Ethiopia is one of the countries that have low productivity, although the manufacturing labor productivity has grown on average of 4.6% per year over the last two decades (PSI, 2020). The productivity achievement and the factors attributed for improvement in specific companies will throw light on how quickly the labor productivity could be improved.

The experience of UNIDO in Ethiopian shoe factories can be a good example. UNIDO has conducted product development training, implemented Enterprise Resource Planning (ERP) software and created awareness about plant layout in six shoe-manufacturing firms for six months and evaluated the effect of these factors for labour productivity, which was the focus of the organization (UNIDO, 2012). The labor productivity has been improved from 1.6 pairs per operator per day to 21 pairs at Manpo branch of Anbessa factory which has been one of the six manufacturing firms that was embraced in the training program (UNIDO, 2012). Based on the organization’s report, the stated achievement was attributed mainly to the reconfiguration of the layout of the factory.

Similarly, the implementation of Kaizen in Ethiopian manufacturing firms has played a positive role for labor productivity. The self-evaluation report carried out by Ethiopian Kaizen Institute in 2015 on 48 manufacturing firms that implemented Kaizen tools indicates that the Kaizen implementation has resulted in improvement of labor productivity ranging from 1.3% to 60% (Getahun Tadesse, 2018). The institute identified that the large difference in the percentage of improvement was related to the degree of implementation of technology in various operations of the manufacturing firms. This tool has contributed for more improvement in labor-intensive firms and less in high-tech manufacturing firms. From this we can understand that the factors that resulted in high improvement like shop floor layout configuration by UNIDO and Kaizen implementation do not require technology as well as extra material resources.

### ***Linking of manufacturing firms with global distributors***

World class distributors like H&M and PVH have started sourcing from the Hawasa Industry Park (BBC, 2017). This is considered as an early success. So far, more than 70 branded global distributors have started distributing their products from Ethiopia and some are in the process to undertake the distribution activity (Ester and Theuws, 2017). The detailed information of the distributors is presented in Annex C, after customizing the existing studies. In general, the existing studies give hope that Ethiopia will be the future sourcing hub of textile and leather goods for the global distributors (Young, 2016; Yuan Sun, 2017).

### **THE EXISTING CHALLENGES IN THE LEATHER AND TEXTILE INDUSTRIES**

Studies indicate that manufacturing firms have faced severe challenges in utilizing their design capacity. The report by UNDP reveals that the manufacturing firms were performing on average at 67% of their design capacity in 2015 (UNDP, 2018) while the survey conducted in 2017 by ECSA showed the utilization of 58% of their design capacity (CSA, 2017). This illustrates that the capacity utilization of the manufacturing firms is decreasing over time rather than increasing. The problem varies from sector to sector. The leather and textile sectors have also faced the under-capacity utilization (Mines Paris Tech, 2016; Koleros and Attfiled, 2017). For instance, the tanneries dedicated for processing and finishing of skins and hides operate at 40% and 60% of their design capacity, respectively (Mines Paris Tech, 2016). There is also an attempt to measure the under-capacity of firms in terms of loss of production days. Based on an evaluation conducted in 2017, the tanneries lose 33 production days per year on average. Similarly, the ginneries, which are the first nodes in the textile industry, lose 45 days. Other nodes of the leather and textile sectors have registered a loss of 12-17 days (Koleros and Attfiled, 2017).

Few studies reveal the factors contributing to the under-utilization of the design capacity of the manufacturing firms. Koleros and Attfiled (2017) relate the problem with the changes in business practices. According to their investigation, the textile and leather sectors have been focusing on the expansion of production capacity and quality improvement rather than on capacity utilization. The Mines Paris Tech study relates the under-capacity utilization in the leather sector to the restriction of export of semi-processed product (Mines Paris Tech, 2016) which has forced the tanneries to shift from semi-processed products to finished product manufacturing; the shifting process has created a gap of utilizing the capacity. The 2015 survey report of McKinsey reveals that the lack of raw material is a critical

problem in the garment industry (Young, 2016). The survey conducted by the ESCA in 2017 on manufacturing sector reinforces the indicated studies (CSA, 2017). The decreasing trend of raw material quality has been identified as one of the factors for low capacity utilization in the leather sector (Mines Paris Tech, 2016). Shortage and/or erratic power supply and lack of access to financial institutions have been reported as the limiting factors for under-capacity utilization of Ethiopian manufacturing firms excepting the foreign manufacturing firms and the firms that operate in the industrial parks (CSA, 2017).

## **SUMMARY AND CONCLUSIONS**

The information of the leather and textile industries development in Ethiopia is available in scattered manner across many disciplines. In this paper, we have synthesized the large and fragmented data into three themes including (1) strategy of stimulating manufacturing, (2) practices of manufacturing performance improvement, (3) achievements and challenges.

Based on our careful assessment, a wide range of activities have been implemented to stimulate the textile and leather industries. Mega hydro-electric dams having the purpose of supplying cheap electric energy, state of the art ‘plug-and-play industrial parks’- the largest manufacturing facilities in Africa, and electric driven railways are some of the projects taken to encourage the manufacturing firms. In addition, various performance improvement tools and techniques have been implemented. However, Kaizen is the widely implemented performance tool in the leather and textile industries.

This study has also attempted to understand the achievements in the leather and textile industries by classifying the events into before and after the implementation of the projects having the purpose to encourage and improve the performance of manufacturing firms. Major projects have been launched since 2010. Hence, 2012 has been taken as a base line and manifestation of the performances before the implementation of the projects. Whereas, the performances noticed after five years since the implementation of the projects, that is, from 2015 to 2018 has been considered as new achievements. Accordingly, the study finds the following interrelated achievements: (i) the manufacturing capacity of leather and textile industries has increased enormously due to the expansions of existing firms and entry of new firms. For instance, the new facility of Anbessa shoe manufacturing which started its operation in 2016 has expanded to the extent that enables to produce itself 41% of the aggregate production capacity of the rest of the main, large and medium-scale shoe manufacturing firms in 2012. Similarly, the Huajian

Group, the Chinese based shoe manufacturer, which started its operation in Ethiopia in 2011, has expanded in 2018 to the extent that enables to produce itself 81% of the aggregate production of the rest of the main large and medium scale shoe manufacturing firms in 2012. In particular, the new manufacturing facilities which entered recently into operations have become the change makers in production capacity of the country. Hawasa Industrial Park is the best example. The estimated revenue to be generated by Hawasa Industrial Park, i.e., \$1billion, when it operates at its full capacity, is equivalent to 71% of the total manufacturing export output of Ethiopia performed in 2015. It is also higher than the revenue of the coffee industry of Ethiopia earned in 2017/2018. This demonstrates that the manufacturing activities generate more value than the vast agricultural activities.

(ii) Many local firms have improved their product quality by implementing the performance improvement activities and taking innovative measures. For instance, about 78% of textile and leather manufacturing firms, and 83% of the tanneries in Ethiopia have introduced innovations, that is, mechanization and automation and have increased their product quality in three years from 2013 to 2016. In addition to this, the firms have also reduced the cost and improved the quality by implementing performance improvement tools. For instance, Kaizen implementation has resulted in reduction of defects in products ranging from 5.0% to 57%; and a cost reduction ranging from 6% to 33%.

(iii) Many medium and large-scale manufacturing firms in the leather and textile industries have penetrated the global market through world class distributors. About 70 distributors have either started or showed interest to source leather and textile products from Ethiopia.

The study has also reviewed the challenges of the ongoing manufacturing development and reports the following findings. Precisely, the large and medium-scale manufacturing firms in the leather and textile industry have faced a severe challenge of utilizing their design capacity, even though they are given priority by the government of Ethiopia. In general, the manufacturing sector including the leather and textile industries operate on average at 58% of their design capacity. The shortage, quality and price of input materials, including the locally available raw materials, is the main cause for such under capacity operation regardless of the place of operation (inside industrial parks and special economic zones versus outside) and ownership of firms (foreign and domestic). However, few literature evidences reveal that the volume of raw material produced in the country, in particular, in the leather sector is greater than the design capacity of tanneries. This implies that all the raw material produced may not arrive at the compounds of manufacturing firms at the right time with right quality and quantity. Such paradox could be solved by applying the concept of supply chain management. Similarly, the shortage of manufactured or processed materials needed as input to

manufacturing firms is one of the limiting factors for under capacity utilization. On the other hand, the manufacturing policy in Ethiopia rewards the manufacturers that export the manufactured or processed materials. As a result, the firms located in Ethiopia prefer to export the processed materials than supplying to other manufacturing firms located in Ethiopia. As a consequence, the manufacturing firms located in Ethiopia are forced to import the processed materials of similar or equivalent quality of the processed materials exported by other manufacturing firms from Ethiopia. This impedes the advantage of supply chain integrity that could be gained by firms located in the same geographic boundary. Shortage of electric energy and lack foreign currency are also some of the factors that attribute to the under capacity operation of manufacturing firms. However, the problem is not for all firms like the problem of input materials. It depends on the place of operation and ownership type. For instance, firms operate in the industrial parks and special economic zones get power for 24 hours since they have separate power stations. Similarly, the effect of foreign currency is not a common problem. Firms having foreign ownership have a better access to financial institution of their base (country).

In conclusion, the textile and leather industries development in Ethiopia would have many implications. Above all, it can move steps forward the manufacturing capability of Ethiopia so that manufacturing in Ethiopia: (i) could significantly contribute for the economic development of the country by selling products having higher values than the raw resources, (ii) creates job opportunity for Ethiopians, the second populous and youth dominated country in Africa, and (iii) fosters innovation, that is, one of the contributions of manufacturing proved in developed countries. All these can ultimately play to decrease the poverty of the country and improve the living standards of its citizens. Secondly, the manufacturing development in Ethiopia can throw light in the East African countries and could be used as a hub of manufacturing so that it can trigger logistics, distribution and other business in East African countries. Thirdly, if Ethiopia succeeds, the manufacturing experience of Ethiopia could be modeled and scaled up for countries that have similar situations. Hence, the focus of Ethiopian government on textile and leather industries is highly appreciable. However, these industries need a variety of materials produced by other sectors including chemicals, dyes, colorants, components, accessories and packaging materials.

In the end, the following works have been identified for future lines of study: a) Scientific studies on supply chain of manufacturing firms in Ethiopia are limited; also, its effect on capacity utilization is not studied, b) Effect of the existing manufacturing supply chain performance on the capacity utilization of the firms is not studied.



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## Annex A. Location of the existing and future industrial parks in Ethiopia.



Source: Industry Park Development Corporation (IPDC)

## Annex B. The main shoes manufacturers firms in 2012.

S. No	Company	Origin	Country	Installed capacity (Pairs per day)
1	Tikur Abbay	Local		3900
2	Anbesa	Local		3390
3	Kangaroo	Local		1200
4	Peacock	Local		2480
5	Ras Dashen	Local		1000
6	Ok Jamaica	Local		1000
7	Wallia	Local		1000
8	Ramsey	Local		2000
9	Sheba Shoe	Local		1000
10	Bostex	Local		200
11	ARA shoe	Foreign	Germany	2000
12	Hwanjan Shoe	Foreign	China	3000
13	New Wing Addis	Foreign	Italy/China	2000

Source: (UNIDO, 2012)

## Annex C. Garment manufacturing in Ethiopia and global branded distributors.

<b>Manufacturer Name and Address</b>	<b>Ownership (Home Country)</b>	<b>Buyers</b>	<b>Buyers of the manufacturer in general (Unsure if their brand is produced in Ethiopia)</b>
Hirdaramani Garment PLC Factory	Sri Lanka	H&M69	PVH, Inditex, Calvin Klein, UNIQLO, Adidas, Hugo Boss, J. Crew, Pepe Jeans, Patagonia, Michael Kors, asics, Reebok, The Children's Place, George, Eddie Bauer, Columbia, F&F, PrAna, Lucky Brand, SanMar, PINK, Victoria's Secret, True Religion, Club Monaco, TU, Lilly Pulitzer, OshKosh, Cotton On, Napapijri70
New Wide Garment Hawassa Industrial Park MUST Garment Hawassa Industrial Park (HIP)	Taiwan Hong Kong	PVH	Tommy Hilfiger, Calvin Klein, Van Heusen, IZOD, Arrow, Speedo, Warner's, Olga80
ELTEX Textile and Garment	Ethiopia	Studio Ray, Umbro, Gerrys, Weather Proof, Miss K London Limited,8 CANTORP (China), Du La Mi Suo, Stanley (CA)62	Abercrombie & Fitch, American Eagle, Brandtex, C&A, Columbia, Federated, JCPenney, Kohl's, Macy's, Prenatal, Primark, Ralph Lauren, SEARS, Target, Tommy Hilfiger, Orsay, Benneton, Charles Vögele, Walmart77
ETUR Textile Haama MAA Garment And Textiles	Turkey Israel Kebire Enterprise group (Ethiopia)	H&M72, Edwards (US), Walmart (US), Obermeyer (DE), MOC (US),DVH Apparel (China), Bonghwa (US)73, Tesco PLC, Asda Stores Ltd74 Major customers come from Germany, Norway, Netherlands, Austria/, Turkey, Israel, Saudi Arabia and Africa.75	C&A, Marks & Spencer, Levi Strauss68
Nazareth Garment in Eth.) Share Company78	Joint venture Owned 48-48 by Co. Bagir Group Ltd (UK), and Ethiopian family	H&M79	
Shints ETP Garment P.L.C.	South Korea		Jack Wolfskin, Schoffel ,La Sportiva, Salewa, GRIFONE, Trangoworld, KTM, Alpinestar, Dainese, REV'IT, Geox81
Tal Apparel Hawassa Industrial Park (HIP) Vestis Garment Production PLC	Hong Kong	H&M84	Burberry, J. Crew, Nordstrom, Patagonia, PVH83

Source: Esther and Theuws, 2017.