A Study on the Determinants of Manufactured Products Export Performance in Ethiopia : Evidence from Firm Level Data

By

ZELEKE, Yohannes Teshome

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

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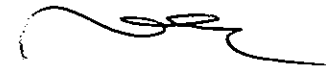
For the Degree of

MASTER OF PUBLIC POLICY

Committee in charge:

Professor Kim, Dongseok, Supervisor

Professor Tabakis, Chrysostomos

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ABSTRACT

A STUDY ON THE DETERMINANTS OF MANUFACTURED PRODUCTS EXPORT PERFORMANCE IN ETHIOPIA: EVIDENCE FROM FIRM LEVEL DATA

By

Yohannes Teshome Zeleke

This study attempted to examine the determinants of manufacturing industry export performance at a firm level. The analysis applied fixed effect, tobit and probit models based on world bank enterprise survey panel data. The finding indicated that the use of website, firm size, firm age, skill intensity, technology, export experience and quality certification are the key determinants of export performance. In contrast, the impact of firm location and foreign ownership are found to be insignificant. The study suggests that firms should consider technology, standardization of process, increasing economies of scale, quality improvement, and certification as key focus areas when formulating export strategy. Firms should make use of internet-based modern communication tools such as website and email to exchange information with clients easily and promote their products.

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ABBREVIATIONS

CIP   Competitive Industrial Performance

CSA   Central Statistical Agency

FE   Fixed Effect

GDP   Gross Domestic Product

GTP   Growth and Transformation Plan

LMMS   Large and Medium Manufacturing Survey

MoFED   Ministry of Finance and Economic Development

PASDEP   A Plan for Accelerated and Sustained Development to End Poverty.

PDC   Planning and Development Commission

R&D   Research and Development

SDPRP   Sustainable Development and Poverty Reduction Program

RE   Random Effect

UNIDO   United Nations Industrial Development Organization

USD   United States Dollar

WB   The World Bank

CHAPTER ONE

1. INTRODUCTION

1.1. Background

Export plays a key role in promoting economic growth. In particular, manufactured products export have a higher positive spillover effect on job creation, value addition, competition, and technology transfer (Buturac, Mikulić, & Palić, 2019; Marconi, Reis, & Araújo, 2016). The government of Ethiopia made export as one of its policy priority. The industrial development strategy which was formulated in 2003, in particular, underlines the importance of competitiveness in the export market in achieving sustainable industrial development (Gebreyesus & Kebede, 2017). The mid-term development plans formulated since the have set ambitious export goals (SDRP, 2002; PASDEP, 2005; GTP I, 2010; GTP II, 2016).

However, Ethiopia's export is small in volume and characterized by a lower level of value addition. The total export earnings stood at USD 2.7 billion in 2018 leading the country to USD 12.4 billion trade deficit (PDC, 2019). The export is based predominantly on a primary agricultural commodity which accounts for 79.4% of the total export, while the manufactured goods account only 18.9% (PDC, 2019). Apart from its small share, the manufactured products export growth has remained stagnant since 2014, registering a 4% average growth (PDC, 2019). The exporting intensity of manufacturing industries stood at 3.5% in 2016, which implies firms generate a small share of their revenue from exporting to international markets (CSA, 2017).

Moreover, Ethiopia ranked 149th in the first dimension of the competitive industrial performance index (CIP) that indicates the capacity to produce and export manufactured goods (UNIDO, 2019).

Therefore, it is vital to examine the key factors that contributed to this poor export performance. Specifically, it is worth to analyze the export behaviour of firms at a micro level to provide evidence to managers, investors, and the public sector.

1.2.   Statement of the Problem

Various actors that affect export firm level export performance have been identified in previous empirical studies. Chen, Sousa, and He (2016), and Beleska-Spasova (2014) categorized these factors into internal and external factors. Internal factors are related to firm characteristics such as sizes, ages and ownership of organizations, whereas external factors include the legal, political and economic environment in which the firms operate (Beleska-Spasova, 2014). Studies conducted in China and Uganda contexts revealed that internal factors such as firm sizes and ownership structures have a significant effect on firms' export performance (Liu & Shu, 2003; Niringiye & Tuyiragize, 2010). Furthermore, firms' capital and skill intensity are deemed to be major determinants of propensity to export in Uganda (Niringiye & Tuyiragize, 2010). Another study conducted in Italy concluded that the firm level export performance could vary depending on the level of innovation, in addition to other firm-specific factors (Sterlacchini, 2001). Zhao and Zou (2002), on the other hand, indicated that external factors such as industry concentration and location have a significant effect in determining firms' propensity to export.

Studies in Ethiopia, on the other hand, concentrated on macroeconomic analytic approach in examining determinants of export performance (Alemu, 2018; Anagaw & Demmissie, 2013; Menji, 2010). This approach utilizes aggregate data such as total export, gross domestic product (GDP), national infrastructure level, effective exchange rate, and total foreign direct investment among others. However, little research has been conducted based on microeconomic analysis using firm-

level data (Bekele & Kaur, 2018; Gete, 2019). Therefore, to bridge this gap, this study will examine the determinants of manufactured products' export performance at the firm level (microeconomic analysis) using industry survey data.

1.3. Research Objective

The major objective of the study is to examine the determinants of firm level export performance of manufacturing industry in Ethiopia.

1.4. Research questions

- Is there a significant relationship between firms' characteristics (firm size, firm age, firm ownership structure, use website or internet, skill intensity) and export performance in Ethiopia?
- Is there a significant relationship between external factors (location and financial access) and firms' export performance?
- What are the key challenges that exporting firms face?

1.5. Significance of the study

This study examines the determinants of manufactured products' export performance at the firm level using survey data. The study is expected to provide concrete evidence to public policymakers and practitioners concerning firms' export behaviour. First, it will provide insight to devise effective export promotion policy and to align the support packages of government with the need of the manufacturing firms. Second, it will help investors and managers to make informed business decisions regarding export marketing strategy.

1.6. Organization of the paper

This study paper is organized in five separate chapters. The first chapter includes the introduction section. The second chapter discusses the theoretical foundations, measurement issues and empirical literature. The third chapter presents the research methodology, data description and hypothesis. The fourth chapter presents data analysis and discussion on findings. Finally, the fifth chapter will discuss the conclusions, recommendations, and limitations of the study.

CHAPTER TWO

2.   LITERATURE REVIEW

This section summarizes and discusses theoretical foundations, measurement issues and review of selected empirical works in the firm export performance literature.

2.1.   Theoretical foundation and conceptual model

The literature of export performance suffers from a lack of a consistent and compressive theoretical framework that explains systematic relationships (Beleska-Spasova, 2014; Chen et al., 2016). In their comprehensive summary of firm export performance literature, Chen et al. (2016), identified 41 different theoretical paradigms applied in 109 articles reviewed.   Various theoretical frameworks have been applied in different studies. Some of this include resource-based view, institutions-based view, contingency view which is based on the structure-conduct-performance framework of industrial organization, organizational learning theory, new trade theories and the perceived risk argument (Bonaccorsi, 1992; Cavusgil & Zou, 1994; Chen et al., 2016; Sharma & Erramilli, 2004; Shoham, 1998; Wernerfelt, 1984; Yi, Wang, & Kafouros, 2013). The resource-based view (RBV) and structure-conduct-performance (SCP) framework of industrial organization or contingency view are the most widely used frameworks in the literature (Beleska-Spasova, 2014; Styles, Patterson, & Ahmed, 2008).

In RBV, firm resources are defined as any tangible and intangible, tradable or non-tradable resource that a firm has and can stay under the firm's control for a considerable time (Wernerfelt,

1984). Firm resources include brand names, technological capability, skilled manpower, business network, organizational procedures, physical equipments and finance among others (Wernerfelt, 1984). These resources provide leverage for the firm to gain and maintain a competitive advantage which implies that firms need to develop, obtain, review, and utilize various resources (Sharma & Erramilli, 2004; Styles et al., 2008; Wernerfelt, 1984; Yi et al., 2013). The SCP paradigm focuses on achieving a fit between internal and external forces (Cavusgil & Zou, 1994; Styles et al., 2008). This theory argues that firms need to adequately respond to the external pressure from the environment they operate in (Beleska-Spasova, 2014; Cavusgil & Zou, 1994).

Firm's export marketing strategy is shaped by either internal or external set of factors. It is defined as a process through which firms react to the interaction of internal and external forces to achieve a set of goals (Cavusgil & Zou, 1994). Internal factors that correspond to the RBV paradigm include firm and product-specific characteristics that are under the direct control of a firm (Beleska-Spasova, 2014). In addition to internal factors, Zhao and Zou (2002), claimed that external factors that are out of the control of firms are crucial in determining the firms' export behaviour. The external factors, on the other hand, correspond to the contingency view or SCP paradigm and include industry and export market features that are not under the direct control of a firm (Beleska-Spasova, 2014; Cavusgil & Zou, 1994).

According to Cavusgil & Zou (1994), export performance is in turn determined by marketing strategy as a moderate factor and by firm characteristics directly. Therefore, the widely applied conceptual framework for determinants of firm export performance based on RBV and contingency view or SCP separate the factors into internal and external factors. The conceptual framework is summarized in figure 1 below.

Resource based view

Internal factors

Firm characteristics

Product characteristics

External factors

Industry characteristics

Export market characteristics

Export marketing

Export performance

Contingency view (SCP)
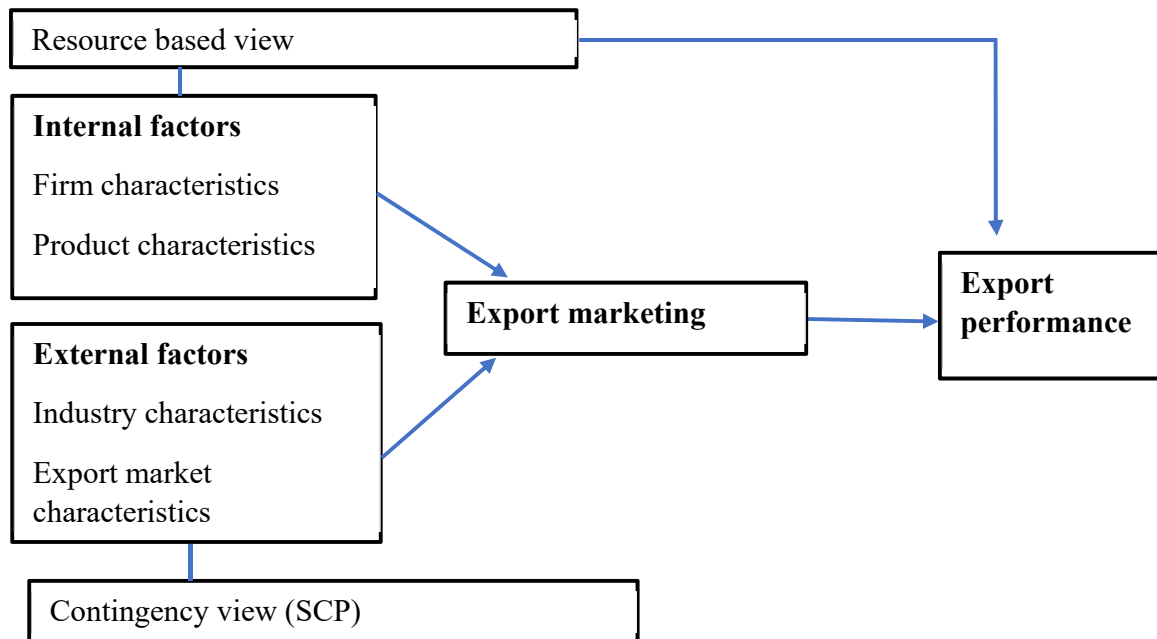
Figure 1: Conceptual model

2.2. Export Performance Measurement

Export is defined as marketing decisions and behaviours of firms in the international market (Cavusgil & Nevin, 1981). Shoham (1998), stresses that this definition is inclusive of all firms that have a different level of international engagement and it captures the varying degree of involvement over time. Thus export performance is defined as a composite result of a firm's success in achieving its objective in the export venture (Shoham, 1998). The objective can be either economic or strategic and the nature of objective dictates the type of indicator used to measure performance (Cavusgil & Zou, 1994).

Beleska-Spasova (2014), categorize measure of export into economic and non-economic measures. Shoham (1998), on the other hand, categorize export performance into three dimensions namely sales, profit and strategy. Sales and profit related measures along with market share related

measures are economic measures. The strategy-based measures correspond to the non-economic measures. There are three sales-related measures. These are export intensity measured by the ratio of export sales revenue to total sales revenue, the absolute value of export sale which is total export sales and export market share (Shoham, 1998). Bonaccorsi (1992), stated that export intensity and export propensity which are both economic and sales-related indicators are widely used for measuring firm's export behaviour in empirical researches. The export propensity is a dummy variable of exporter and non-exporter which measures the probability to export or decision to export (Bonaccorsi, 1992). Export intensity is a ratio of export sales to total sales (Bonaccorsi, 1992; Yi et al., 2013).

The choice of export performance indicator depends on data availability and accessibility, level of assessment, and time frame (Beleska-Spasova, 2014). Most empirical researches use one measure of export performance and some researches applied two measures usually export intensity and propensity. However, some argue that different indicators measure different facets of performance and stress the need to use a multitude of measures to capture the full picture of firm export performance (Calof, 1994; Shoham, 1998).

2.3. Empirical Review

There are extensive research works undertaken at various level and context to examine the determinants of export performance. Schlegelmilch and Crook (1988), categorized the determinants of firm export into four broad categories. The first is management outlooks towards risk, foreigners, importance of marketing (Schlegelmilch and Crook, 1988). Secondly, market access factors such as location and transport cost. The third is distinctive advantages and resources of the firm such as R&D activity, product differentiation, and manager's personal skills (Schlegelmilch and Crook,

1988). The last one is firm demographic characteristics such as size, product life cycle, and domestic sales growth (Schlegelmilch and Crook, 1988). The empirical findings regarding the effect of size, age, type of ownership, skill intensity, location, innovation and technology and other factors on firm export performance are discussed afterwards.

Size is an important demographic characteristic of a firm and often approximated by total employment or total sales volume. Size is key to obtaining credibility and scale economics in the international market. Large size indicates the existence of resources and specialized management knowledge that imply a strong capability to enter and remain in the export market. On the other hand, smaller size is associated with risk-averse attitude of management compared to that of large firms (Bonaccorsi, 1992). Firm growth cycle has an effect as a firm tend to emphasize the domestic market in the early phase of growth until it eventually gets larger and acquires the capacity to face the international market (Bonaccorsi, 1992). Though this claim makes sense to a certain extent, it does not consider firms that are established targeting the export market from the outset.

Various studies found that size generally has a positive effect on export performance (Bekele & Kaur, 2018; Cieślik, Michałek, & Michałek, 2014; Edwards & Balchin, 2008; Liu & Shu, 2003; Niringiye & Tuyiragize, 2010; Serra, Pointon, & Abdou, 2012). Calof (1994), found that firm size is positively related to export performance and the result was consistent after considering various dimensions of export performance. Behmiri (2019), also stated that size is a key factor for the export performance of young firms in Portuguese wine-producing firms. Factors affecting export performance are not the same for all size of firms (Sterlacchini, 2001). The study found that size has a positive effect on export propensity and intensity in small firms subsample, however, the relationship is U shaped for the large firms (Sterlacchini, 2001). Large firms that affiliate with international firms have better performance and small firms more likely to be benefited from

innovation to enhance their export (Sterlacchini, 2001). Wagner (1995) and Schlegelmilch & Crook (1988), found that firm size has a positive effect but after a certain level of size the effect diminishes. Bonaccorsi (1992), found that export intensity is not positively related to firm size based on the Italian firm's data.

There are two opposing views towards the effect of age which is measured by the firm business experience on its export performance. The first argues that firm age is associated with experience advantage, market credibility, ability to adapt to the need of new markets. The second view, however, claims that new firms show more interest in export, make an aggressive move, and use recent technologies as the old firms may tend to be rigid to change their existing strategy. The empirical results exhibit inconsistent result regarding the effect of firm age on export performance. A study by Niaz, Rebelo, Gouveia, and Antonio (2019), found that age has a negative relationship with propensity to export and the effect is higher in larger firms. However, the same study revealed that firm age has a significant positive effect on the intensity of a firm (Niaz et al., 2019). This implies that the likelihood of old and large firms to enter into the export market is lower compared to that of younger and smaller firms. A study revealed that age showed a negative effect in Egypt, Mauritius, Morocco, and South Africa, while it has positive but insignificant effect in Kenya, Madagascar, Tanzania, and Zambia (Edwards & Balchin, 2008). Bekele and Kaur (2018), stated that firm age has a positive and significant effect on export performance. Other studies found no significant relationship between age and export performance (Cieślik et al., 2014; Din, Ghani, & Mahmood, 2009).

The experience in the export business has a positive effect on export performance for the obvious reason that the firm has an advantage acquired through the learning process (Hoang, 1998). Bekele and Kaur (2018), found that prior experience in the export business has a positive and significant

effect on export performance. Similarly, a study conducted in Estonia found that firms that have managers and well-paid workers who have experience of exporting to certain countries will increase the likelihood of entering that area i.e. export propensity (Masso, Roigas, & Vahter, 2015). However, the effect on the export intensity is not that significant (Masso et al., 2015). Hoang (1998), found the export experience has no significant effect.

The ownership structure of firm such as foreign or domestic and private or public is an important factor that could determine export performance. Foreign ownership of a firm is associated with better managerial and technical expertise, experience, and international business linkage and appears to have a positive relationship with firm export performance (Bekele & Kaur, 2018; Cieślik et al., 2014; Edwards & Balchin, 2008; Niringiye & Tuyiragize, 2010). Din et al., (2009) found that the export performance of foreign-owned firms is better compared to domestic owned firms in Pakistan. Niringiye and Tuyiragize (2010), also found a positive relationship between export propensity and foreign ownership in a study of Ugandan manufacturing industries. Cieślik et al. (2014), also found that foreign ownership generally has a positive relationship. However, this effect is not consistent across a different group of countries in the Eastern Europe region (Cieślik et al., 2014). A study conducted using a sample of firms from various African countries revealed a positive relationship between foreign ownership and export performance (Edwards & Balchin, 2008).

Bhavani and Tendulkar (2001), claimed that export performance depends on the forms of organization. The marginal effect of scale, technical efficiency and marketing expense, on export performance differs as one move across different ownership (Bhavani & Tendulkar, 2001).

Human capital which is an indication of the quality of human resource in the firm is regarded as one of the key factors that affect firm export performance. Skill intensity measured by the ratio of

white-collar workers to total number of workers does not exhibit significant effect and the sign is also inconsistent across different African countries (Edwards & Balchin, 2008). Niringiye and Tuyiragize (2010), also found a positive association between skill intensity and propensity to export. On the other hand, the education level of managers has a positive effect on firms export performance in Portugal (Serra et al., 2012).

Location of firms is another important determinant of export performance in the literature. Firms' geographical advantage such as proximity to market, industry concentration, port and transport infrastructure will reduce transportation cost substantially. Zhao and Zou (2002), comfirmed that industry concentration has negative effect and location has a positive effect on export the latter indicating that proximity to coastal areas has a positive effect in China. The authors constructed an index variable for location instead of using the usual dummy variable instead of using the usual binary variable design. Yi et al. (2013), also found a positive relationship between location in coastal areas and export performance.

Innovation and technological capabilities of a firm had a positive relationship with firm performance in most cases. Din et al. (2009) found investment in market-oriented technologies has a positive effect. Wagner (1995) also found a positive effect of technology on firm export intensity. According to Cieślik et al. (2014), the use of foreign technology licenses and R&D activities of a firm is positively related to export propensity with some heterogeneity across a different group of countries. Similarly, the use of information technology contributes to the effort of marketing as a means of easy communication, information access and e-commerce. Edwards and Balchin (2008), found that firms that owned website have a higher probability of exporting relative to the firms without a website in Egypt, Kenya and South Africa.

Factors like quality certification, domestic market, institutional environment, and managerial attitudes have got attention in the literature. Absence of adequate quality certification and process standard is negatively related to the export performance of firms (Din et al., 2009). Regarding the domestic market, Bramati, Gaggero, and Solomon (2015) found that domestic market competition has a positive relationship with the level of export intensity of a firm. Similarly, Wagner (1995)'s a study indicated domestic market share has positive effect on export performance of a firm.

Regarding business environment factors, supply limitation, macroeconomic and legal environment have a significant effect in determining export propensity with variability across countries in Africa (Edwards & Balchin, 2008). A study by Kimuyu (2007) focused on the implication of corruption on firm's performance in Kenya and particularly found that corruption has negatively affected the propensity to export.

A study by Serra et al. (2012), indicated that the number of languages spoken by managers and commitment to exporting is found to be key determinants. This study conducted on the sample of textile firms from Portugal and the UK. A study conducted on Spanish and Italian SMEs found the entrepreneurial orientation of managers is a key factor in fostering export performance when there are organizational learning and innovation (Fernández-Mesa & Alegre, 2015).

There are few empirical studies focusing on the case of Ethiopia. Among these, Gete (2019), has identified raw material supplies, logistics and transportation, skill intensity, financial access, use of the internet, productivity and marketing activities as important factors that determine export performance firms in Dire Dewa, Ethiopia. This study was based on primary data and employed a qualitative method of analysis. Another study that focused on the survival of firms in the export market by Gebreyesus and Gebregergis (2018), indicated firms that are export-orientated, privately owned, firms that are located outside the capital and that have higher productivity are

likely to stay longer in the export market. Even though this study did not measure firm's export performance, it provides some clue about the key factors that affect the export behaviour of firms.

2.4. Overview of manufacturing industry in Ethiopia

The manufacturing industry in Ethiopia is at its lowest stage of development. However, it has registered 9.7% annual growth rate between the period 2000 to 2015 on average. This has indicated a significant improvement from the period between 1990 to 2000 where the growth was nearly zero. The sector contributes about 5% of the GDP and remain stagnant over time (see figure 2).
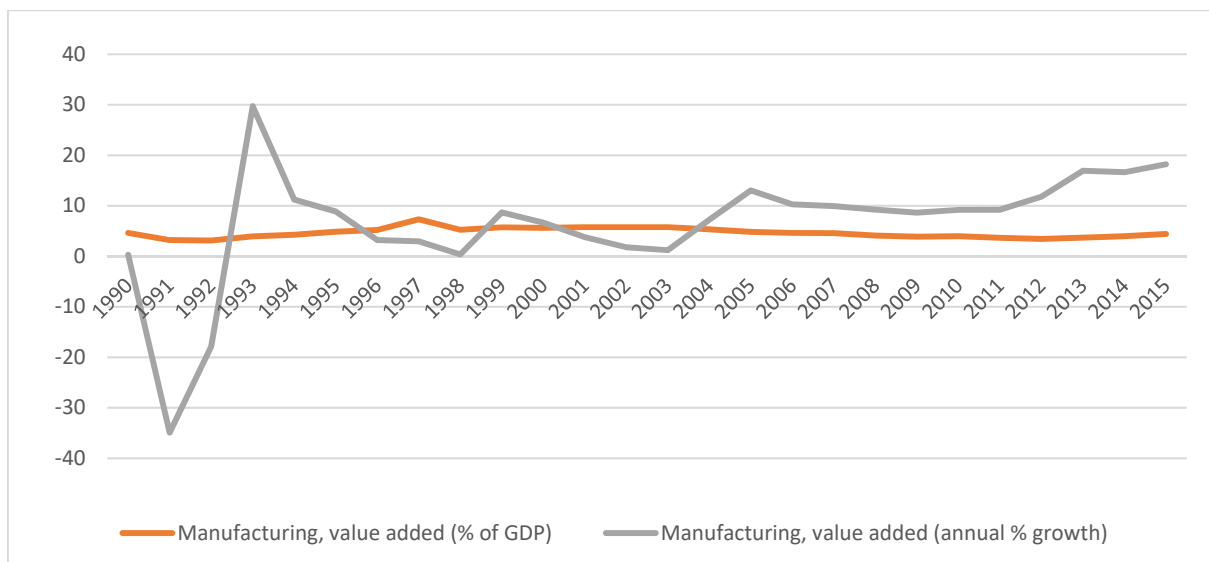
Source: WDI

Figure 2: *MVA share of GDP and annual growth trend.*

The export share of the manufacturing sector has remained stagnant at around 15% of total merchandise export and even exhibited a declining trend despite the growth of the sector. This is one of the indicators for the poor performance of the manufacturing sector in the export market.

Source: WDI

Figure 3: Share of manufactured export

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

3.1. Research Method and Data

There are two major sources of firm-level data for Ethiopian manufacturing firms. The first is the large and medium scale manufacturing survey of Ethiopia (LMSMS) which is conducted annually by the Central Statistics Agency (CSA). This survey has wide coverage (geographical and number of firms) and extensively used for national accounting purpose and micro-level analysis of firm behaviour. Its major drawback is that it covers only basic variables related to firm hence, has a limited option when it comes to variables. The second source of data is the World Bank (WB) Enterprise survey which is conducted every five years. Sofar, WB has conducted three rounds of the survey in 2006, 2011 and 2015. The 2011 and 2015 can be used to construct unbalanced panel data because there are firms that have been covered on both surveys. The main advantage of this data set is that it provides a wide range of variables regarding the firm. However, geographically it only covers four regions and the sample size is smaller.

Therefore, the WB enterprise survey is used for the econometric analysis to take advantage of the variable choice it provides. The number of observation is 404 and the number of firms is 335 after some observations are dropped during data cleaning. Also, the analysis is supplemented by WB's world development indicator (WDI) data and CSA's 2016/17 LMMI survey data.

The study is based primarily on quantitative research method using a panel data set. There are two options for panel data analysis namely Fixed Effect (FE) and Random Effect (RE).

$$y_{it} = \beta_0 + \beta_1 x_{it1} + \ldots + \beta_k x_{itk} + a_i + u_{it},$$

In FE the unobserved effect a_i will be eliminated during the first differencing as it is assumed to be correlated with independent variables (Cov x_{itj}, $a_i \neq 0$). In the case of RE, however, a_i is assumed to be uncorrelated with the independent variables in all periods (Cov x_{itj}, $a_i = 0$). In this case, elimination of a_i will result in inefficient estimator in the regression (Wooldridge, 2016). Usually, the famous Hausman test is applied to decide the appropriate model for the case at hand among the two. To this end, Fixed Effect (FE) model appeared to be appropriate for the analysis (see appendix).

However, due to the characteristics of dependent variables data tobit and probit models of panel data are used for the final hypothesis testing. The export intensity-dependent variable is a ratio and it involves a significant number of observations with zero values. The appropriate model for such kind of data distribution is the tobit model. On the other hand, the export propensity is a binary dependent variable that holds only 0 or 1 values. The linear probability model specifically probit model should be applied for this kind of dependent variable (Wooldridge, 2016).

3.2. Model specification and definition of variables

Two models of export performance are proposed based on the literature considering both internal and external factors. The first model is the export intensity model.

$$ex_{intensity} = \beta_0 + \beta_1 website + \beta_2 size + \beta_3 age + \beta_4 frgnown + \beta_5 cityloc + \beta_6 skillint + \beta_7 export\_expr + \beta_8 tech\_license + \beta_9 rsrch\_devt + \beta_{10} qlty\_certified + \varepsilon_i \ldots\ldots\ldots.(1)$$

The dependent variable ex_intensity denotes export performance, measured by a ratio of export sales to total sales. It is the most commonly used measure of export performance.

The second model is the export propensity model. The dependent variable is a binary variable that holds 1 for firms that export and 0 for those not exporting.

$$ex\_propensit = \beta_0 + \beta_1 website + \beta_2 size + \beta_3 age + \beta_4 frgnown + \beta_5 cityloc +$$

$$\beta_6 skillint + \beta_7 tech\_license + \beta_8 rsrch\_devt + \beta_9 qlty\_certified + \varepsilon_i \ \dots\dots\dots\dots(2)$$

Whereas *website* denotes the use of the website, *size* denotes firm size proxied by employment, *age* denotes the business experience of a firm, *frgnown* denotes foreing ownership of a firm, *cityloc* denotes the geographical location of firms in the capital city and the surrounding region, *skillint* denotes skill intensity as a measure of the human capital of a firm, *export_expr* denotes firm's experience in the export market, *tech_license* denotes the use of licenced technology, *rsrch_devt* denotes if a firm has invested in R&D activities and *qlty_certified* denotes quality certification. The definition and measurement scale is summarized in the following table.

Variable	Definition	Type
Ex_intensity	Ration of firm's export to total sales.	ratio
Ex_propensity	1 if a firm is exporter and 0 otherwise	binary
website	1 if a firm has website and 0 otherwise	binary
Size	Firm's number of full-time employees.	continuous
Age	Number of years since a firm is established/business experience.	continuous
frgnown	1 if a foreigner has more than 10% share in the firm's equity and 0 otherwise.	binary
cityloc	1 if a firm is in the capital city and surrounding area and 0 otherwise	binary
skillint	Ratio of non-production workers to total employees	ratio
export_expr	firm's years of experience in the export market	Continuous
tech_license	1 if a firm uses licensed technology and 0 otherwise.	binary
rsrch_devt	1 if a firm invested in R&D and 0 otherwise.	binary

| *qlty_certified* | 1 if a firm has standard quality certification and 0 otherwise | binary |

Table 1: Description of variables

3.3. Hypothesis
a) Export intensity

H_0: Use of website, size, age, location, foreign ownership, skill intensity, technology, quality certification on products, and export experience of firms do not affect firm export intensity.

H_1: Use of website, size, age, location, foreign ownership, skill intensity, technology, quality certification on products, and export experience of firms are positively related to firm export intensity.

b) Export propensity

H_0: Use of website, size, age, location, foreign ownership, skill intensity, technology, and quality certification of firms do not affect firm export propensity.

H_1: Use of website, size, age, location, foreign ownership, skill intensity, technology, and quality certification of firms are positively related to firm export intensity.

CHAPTER FOUR

4.   DATA ANALYSIS AND DISCUSSION

4.1.   Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ex_propensity	475	0.12211	0.32775	0	1
ex_intensity	474	6.40928	20.8315	0	100
website	475	0.35789	0.47989	0	1
size	475	150.747	534.094	1	7600
age	475	28.0758	159.641	0	2020
frgnown	439	0.12073	0.32618	0	1
cityloc	475	0.55368	0.49763	0	1
skillint	440	0.2978	0.19489	0	1
export_expr	469	1.18337	4.62487	0	52
tech_license	475	0.17895	0.38371	0	1
rsrch_devt	475	0.14737	0.35485	0	1
qlty_certified	475	0.14316	0.3506	0	1

Table 2: Descriptive statistics

4.2.   Regression and discussion of findings

In this study use of the website, size, age, foreign ownership, technology, skill intensity, and export business experience can be regarded as internal factors. Location and financial access can be regarded as external factors. The regression result of each model has been discussed below.

4.2.1.　Export intensity

VARIABLES	Fixed Effects	Tobit
website	10.70*	60.82***
	(6.343)	(15.29)
size	0.0211*	0.00728
	(0.0116)	(0.00604)
age	0.00309	-0.975**
	(0.00306)	(0.421)
frgnown	-9.587*	5.194
	(5.163)	(14.26)
cityloc	-6.086	-5.814
	(5.669)	(13.15)
skillint	18.62*	48.99*
	(10.53)	(26.83)
export_expr	1.052**	6.663***
	(0.430)	(1.009)
tech_license	7.919*	36.56***
	(4.029)	(12.52)
rsrch_devt	8.937*	17.40
	(4.990)	(14.30)
qlty_certified	-0.00310	7.214
	(4.167)	(13.83)
sigma_u		32.42**
		(13.13)
sigma_e		45.00***
		(9.677)
Constant	-5.955	-132.5***
	(4.905)	(23.75)
Observations	404	404
Number of idstd2015	335	335
R-squared	0.457	
Firm FE	YES	
Year FE	YES	

Standard errors in parentheses (robust standard error for the fixed effect)

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Regression result for FE and tobit model.

From the tobit model result, one can observe that internal factors emerge as key determinants of export performance. A location which is external factors appears to have no significant effect on firm export performance. Size, foreign ownership, R&D and quality certification appear to be insignificant. Bonaccorsi (1992), also found no significant relationship between size and

manufacturing sector export performance. However, this result shows deviation from the large body of literature that suggests a positive effect of firm size and foreign ownership (Bekele & Kaur, 2018; Cieślik, Michałek, & Michałek, 2014; Niringiye & Tuyiragize, 2010).

The use of the website has shown positive and significant association with export intensity. This implies that firms that use website have 60.8% higher export intensity compared to firms without a website while holding other things constant. Presence of information technology will help firms to easily exchange information with their clients about their products and provide them access to information about the market (Edwards & Balchin, 2008).

Age has a negative effect on export intensity which imply that the older the firm the lower the export performance. The regression result shows that as the export intensity of a firm will decline by 1 % as the age of the firm increases by a year. This finding seems to support the claims that new firms tend to engage in export business, make an aggressive move, and use recent technologies as the old firms may tend to be rigid to change their existing strategy (Edwards & Balchin, 2008; Niaz et al., 2019). In the case of Ethiopia, most of exporting manufacturing firms are probably new firms that have started business in the last decade.

Technology is also found to be significant and positive. Firms that use licensed technology have 36.5% higher export intensity compared to the firms that do not use any licensed technology. Technology is vital for cost minimization, improved quality, and overall firm competitiveness, and the result is consistent with the findings of previous empirical studies (Cieślik et al., 2014; Din et al., 2009; Wagner, 1995).

Moreover, prior export business experience of a firm and the level of its skill intensity is positively and significantly associated with export intensity. Export intensity increases by 49% as firm's skill

intensity increases by 1 percentage. This result shows the importance of quality human capital for better export performance. A study in Uganda also found a positive association of skill intensity and export performance (Niringiye & Tuyiragize, 2010). The experience in the export business is positively and significantly associated with export intensity at 1% level of significance. The export intensity increases by 6.6% as export experience increases by a year.

4.2.2.   Export propensity

VARIABLES	Probit
website	4.169***
	(1.035)
size	0.00412**
	(0.00164)
age	-0.00231
	(0.00913)
frgnown	1.014
	(1.057)
cityloc	0.243
	(0.987)
skillint	2.657
	(1.982)
tech_license	0.520
	(1.004)
rsrch_devt	1.817*
	(0.933)
qlty_certified	3.633***
	(1.042)
lnsig2u	3.105***
	(0.230)
Constant	-11.34***
	(1.268)
Observations	407
Number of idstd2015	337

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4:Regression result for probit model

The above result table shows that use of the website, size of firm, R&D investment, and quality certification are key determinants of the export decision or propensity of export. The coefficients of these variables are positive meaning firms that use the website, larger firms, and firms with quality certification have a higher probability of engaging in export. Firms that have websites, R&D investment, quality certification have 4.2%, 1.8%, and 3.6% higher probability of exporting, respectively. Other things remain constant, the probability of exporting increases by 0.4% as firm size increases by a unit.

These findings support the argument that different measures of export performance lead to different result (Calof, 1994; Shoham, 1998). Some variables that are significant in the export intensity model for example technology and skill intensity are not significant in the export propensity model. Size is important for export decision while it is not significant for the export intensity and vice versa for age. Use of the website is the only variable that is significant in both models. The reason for the difference might be the difference in measurement and method.

4.3.   Challenges facing manufacturing firms

The analysis above largely illuminates the factors that are specific to individual firms. However, different obstacles could affect firm's production capacity. This is evident from the low level of production capacity utilization. The average capacity utilization level of the medium and large manufacturing is 62.3% during 2010/11 and 2015/16.

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	Average
Capacity utilization (%)	66.9	65.88	65.9	65.6	61	54	62.3
Share of imported raw material input (%)	44.1	37.2	44.3	50.9	49.0	48.8	45.7

Source: Based on LMMIS 2010 to 2016

Table 5:Capacity utilization and share of imported raw material

The imported share of raw material input is 45.7 % during the same period. This implies that there is huge dependence on import for raw material and this *added with* the critical foreign exchange shortage in the country and poor logistics system, it has affected the production capacity and competitiveness of the firms in the export market. In table 6 below, shortage of raw materials supply is stated as the first major reason for not working at full capacity by 34 % of the firms covered in the survey in 2015/16.

Major Reason	Percentage of firms stated as first reason for not working at full capacity					
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Shortage of supply of raw materials	40.15	40.61	36.01	36.29	33.08	33.85
Shortage of supply of spare parts	3.79	3.51	4.64	3.29	2.63	4.44
Absence of market demand	17.75	17.3	18.6	18.74	18.86	25.5
Absence of credit facility	7.70	5.72	5.88	6.63	6.49	4.55
Shortage of foreign exchange	5.97	5.67	6.98	5.91	4.33	4.33
Lack of adequate skills	1.84	2.31	2.3	1.57	1.35	1.93
others	2.41	2.64	1.63	2.19	1.97	2.11
Not stated	20.39	22.25	23.96	25.37	31.3	23.28
Total	100.00	100	100	100	100	100

Source: Based on LMMIS 2010 to 2016

Table 6:Major reason for not working at full capacity

Moreover, absence of market demand, absence of credit facility, and shortage of foreign exchange were the second, the third, and the fourth popular reason for not working at full capacity. These problems are also stated as major operational problems by the medium and large manufacturing firms covered in the survey (see table 7).

Major Problem	Percentage of firms stated as first major operational problem					
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Shortage of supply of raw materials	33.77	40.25	34.32	34.51	29.72	33.25
Shortage of supply of spare parts	3.75	3.64	3.88	3.29	2.41	4.72
Absence of market demand	14.63	14.62	17.34	14.91	19.02	20.32
Lack of working capital	9.46	6.58	7.48	6.73	7.54	6.15
Frequent machinery failure	4.79	4.04	4.85	4.34	3.23	2.97
Lack of working premises	3.15	2.11	3.11	3.17	4.79	3.85
Problems with employees	2.18	2.37	1.66	1.53	1.94	1.67
Government rules and regulations	3.86	3.2	2.83	3.21	2.51	2.06
No problem faced	8.16	10.8	6.59	5.56	2.62	10.24
others	16.26	5.36	15.64	22.57	26.19	3.69
Not stated	-	7.02	2.3	0.2	0.03	11.08
Total	100.00	100	100	100	100	100

Source: Based on LMMIS 2010 to 2016

Table 7: Major operational problems

This generally indicates, the existence of a critical supply-side limitations in the industry that could affect the capacity for engaging in the export market and competitiveness of the firms in the international market. This could be due to poor backward linkage with the primary industries and inefficiency of government support. Lack of foreign exchange is partly a result of the low level of export earning and the high debt servicing puts pressure on the already scarce foreign exchange. The implication is that the government should take appropriate policy measures and improve its facilitation role. This could be in areas of promoting linkages with the primary sector, maintaining macroeconomic stability, devaluation of the domestic currency, improving financial access, and market facilitation, among others.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study attempted to examine the determinants of export performance measured in export intensity and export propensity. The analysis is made based on panel data from the world bank survey. The finding shows that the use of website, firm size, firm age, skill intensity, technology, export experience and quality certification are the key determinants of export performance. In contrast, location, financial access, and foreign ownership are not significant in determining export performance. In addition, firms face a shortage of raw material supply, low market demand, shortage of foreign exchange, and low financial access which in turn are major reasons for underutilization of production capacity.

5.2. Recommendation

The study suggests that the export performance of firms can be improved through the provision of information technology. Firm managers should consider technology, standardization of process and certification as key focus areas when formulating export strategy. Firms should make use of internet-based modern communication tools such as website and email to exchange information with clients easily and promote their products. The government should also provide adequate support to firms in acquiring technology and quality certification. Moreover, it should promote linkage with the primary sector, improve financial access and provide market facilitation assistance.

In this study, the sectoral difference within the manufacturing industry is not considered hence, could not capture the industry-specific behaviours of each sub-industry. Moreover, recent data

may provide different result by capturing new developments such as the establishment of export and product specialized industrial parks and the danger posed by the deterioration of the security situation in recent years.

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APPENDIX

APPENDIX

1. Regression results

a) Fixed effect model

```
Fixed-effects (within) regression              Number of obs      =       404
Group variable: idstd2015                      Number of groups   =       335

R-sq:                                          Obs per group:
     within  = 0.4573                                        min =         1
     between = 0.2527                                        avg =       1.2
     overall = 0.2596                                        max =         2

                                               F(10,334)          =      2.44
corr(u_i, Xb)  = -0.3871                        Prob > F           =    0.0080

                     (Std. Err. adjusted for 335 clusters in idstd2015)
```

ex_intensity	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
internet	10.69551	6.342904	1.69	0.093	-1.781566	23.17259
size	.0210711	.0115939	1.82	0.070	-.0017352	.0438774
age	.0030907	.0030581	1.01	0.313	-.0029248	.0091062
frgnown	-9.587397	5.163254	-1.86	0.064	-19.74399	.5691976
cityloc	-6.085746	5.668886	-1.07	0.284	-17.23697	5.065474
skillint	18.61713	10.52647	1.77	0.078	-2.089406	39.32366
export_expr	1.051921	.4296076	2.45	0.015	.2068437	1.896999
tech_license	7.918795	4.029457	1.97	0.050	-.0075186	15.84511
rsrch_devt	8.936969	4.989873	1.79	0.074	-.87857	18.75251
qlty_certified	-.0031029	4.167329	-0.00	0.999	-8.200623	8.194417
_cons	-5.954539	4.905112	-1.21	0.226	-15.60334	3.694267
sigma_u	17.324479					
sigma_e	13.178059					
rho	.63347053	(fraction of variance due to u_i)				

b) Tobit model

ex_intensity	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
internet	60.81674	15.29367	3.98	0.000	30.84169	90.79179
size	.0072775	.0060391	1.21	0.228	-.004559	.019114
age	-.9748789	.4205258	-2.32	0.020	-1.799094	-.1506635
frgnown	5.194032	14.26038	0.36	0.716	-22.7558	33.14387
cityloc	-5.814431	13.15052	-0.44	0.658	-31.58899	19.96012
skillint	48.98924	26.83071	1.83	0.068	-3.597978	101.5765
export_expr	6.663145	1.009301	6.60	0.000	4.68495	8.641339
tech_license	36.55539	12.51773	2.92	0.003	12.02109	61.0897
rsrch_devt	17.3999	14.29987	1.22	0.224	-10.62733	45.42713
qlty_certified	7.214085	13.8326	0.52	0.602	-19.89732	34.32549
_cons	-132.4574	23.75364	-5.58	0.000	-179.0137	-85.90113
/sigma_u	32.42012	13.12891	2.47	0.014	6.687929	58.15231
/sigma_e	45.00099	9.676871	4.65	0.000	26.03467	63.9673
rho	.3416814	.2533178			.0391739	.8275676

LR test of sigma_u=0: chibar2(01) = 1.71   Prob >= chibar2 = 0.096

c) Probit model

ex_propensity	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
internet	4.168817	1.035294	4.03	0.000	2.139678	6.197956
size	.0041185	.0016359	2.52	0.012	.0009122	.0073249
age	-.0023083	.0091293	-0.25	0.800	-.0202014	.0155848
frgnown	1.014152	1.056683	0.96	0.337	-1.056909	3.085212
cityloc	.2432614	.986936	0.25	0.805	-1.691098	2.17762
skillint	2.656662	1.982037	1.34	0.180	-1.228059	6.541384
tech_license	.5199811	1.004288	0.52	0.605	-1.448387	2.488349
rsrch_devt	1.816723	.9332618	1.95	0.052	-.0124368	3.645882
qlty_certified	3.633203	1.041837	3.49	0.000	1.59124	5.675166
_cons	-11.34335	1.267945	-8.95	0.000	-13.82848	-8.858223
/lnsig2u	3.104959	.2297399			2.654677	3.555241
sigma_u	4.723167	.5425498			3.770994	5.915763
rho	.9570968	.0094337			.9342987	.9722193

LR test of rho=0: chibar2(01) = 20.40   Prob >= chibar2 = 0.000

2. Tests

a) Hausman test

Hausman test is conducted for equation one to determine the appropriate model for the panel data analysis. The test result suggests the use of FE model.

```
              ── Coefficients ──
                 (b)          (B)           (b-B)       sqrt(diag(V_b-V_B))
                fixed        random       Difference          S.E.

    internet   10.69551     3.742731      6.952779          4.819872
        size    .0210711     .0031854      .0178857          .0059336
         age    .0030907    -.0012563       .004347          .0068178
     frgnown   -9.587397     .3701519     -9.957549          5.014018
     cityloc   -6.085746    -.9889853     -5.096761         11.22016
    skillint   18.61713     6.581951      12.03518           9.78613
 export_expr    1.051921    2.712531      -1.660609          .3302946
tech_license    7.918795    8.281648       -.3628535        4.282074
  rsrch_devt    8.936969    1.880083       7.056887          3.741677
qlty_certi~d   -.0031029   -2.534614       2.531511          4.290146

                     b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

   Test:  Ho:  difference in coefficients not systematic

           chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                    =        52.86
           Prob>chi2 =       0.0000
```

b) Heteroskedasticity test

Modified Wald test for groupwise heteroskedasticity is conducted to determine if there is heteroskedasticity issue. The null is homoskedasticity which is constant variance. The test result below implies rejecting the null hypothesis suggesting that there is heteroskedasticity. Therefore, for the FE model robust standard errors have been applied to address this issue.

```
H0: sigma(i)^2 = sigma^2 for all i

chi2 (335)   =    7.6e+39
Prob>chi2 =      0.0000
```

c) Testing for time fixed effects

The test result below indicates that the null is not rejected implying that the coefficients for all years are not jointly equal to zero. Therefore, time fixed effects are not needed.

```
. testparm i.year

( 1)   2015.year = 0

       F(  1,     58) =     0.97
             Prob > F =     0.3298
```