Addis Ababa University

College of Business and Economics

The Determinant Performance of Large and Medium Manufacturing Firms in Ethiopia

BY

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School of Graduate Studies

This is to certify that the thesis prepared by Kidan Assefa entitled "factor affecting performance of large and medium manufacturing firms in Ethiopia" submitted in partial fulfillment of the requirements for the degree of master of science in economics compiles with the regulation of Addis Ababa and meets the accepted standards with respect to originality and quality.

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Advisor: Zerayehu Sime (Dr.) Signature _____ Date _____

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STATEMENT OF DECLARATION

I, Kidan Assefa, declare that this study entitled factor affecting performance of large and medium manufacturing firms in Ethiopia, is my own work. I have carried out the research work independently with the guidance and support of the research advisor. As far as my knowledge, this study has not been submitted to any degree/diploma in Addis Ababa University or any other institution. It is done in partial requirement of the MSc Degree in Economics.

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STATEMENT OF CERTIFICATION

This is to certify that Kidan Assefa has carried out his research work on the topic entitled with the factor affecting the performance of large and medium manufacturing firms in Ethiopia. This work to the best of my knowledge is original in nature and is suitable for submission for the award of MSc in economics.

Advisor:

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Date _____

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Abstract

The topic of performance on the large and medium manufacturing firm has been widely explored as an area of study. Many studies have tried to identify the effect of performance in the manufacturing firm. However with firm performance there have been many divergent finding due to different sectors exhibiting different behaviors and models that attempt to identify factor affecting performance of large and medium manufacturing firms. This research seeks to examine factors affecting performance of large and medium manufacturing firm in Ethiopia in the year 2013 to 2017. The objective of the study is to examine the various factors that affect the performance of large and medium manufacturing firms in Ethiopia. The researcher used secondary data from central statistical agency. The regression result shows that capacity utilization, labour productivity, export intensity, import intensity, Herfindahl index had statistically significant and positively relationship with the performance of large and medium manufacturing in Ethiopia at 5% of level of significance. The finding also shows firm size had statistically significance and negatively relationship with the performance of large and medium manufacturing firm in Ethiopia at 5% of level of significance. Based on the finding of the study, improving performance of firms specific factors such as export intensity, labour productivity, capacity utilization and import intensity leads to the improving the performance of large and medium manufacturing firm.

Key words: Performance, Herfindahi index, Export intensity, Labour productivity, Firm size, Capacity utilization

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List of Acronyms

BIS - Basic Industrial Strategy

CSA - Central Statistical Agency

EPRDF - Ethiopia people's revolutionary democratic front

EU - European Union

GDP - growth domestic product

GTP - growth and transformation plan

IMF - international monetary fund

LMEDSE - Large and medium Enterprise Development Strategy of Ethiopia

MVA - manufacturing value added

MIGA - Multilateral investment guarantee agency

PASDEP -plan of action for sustainable development and eradication of poverty

SDPRP - sustainable development and poverty reduction program

WB - World Bank

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

In Ethiopia industry in the modern sense the term emerged as an economic entity only at the turn of the 20th century. The establishment of the strong central government, expansion of cities associated with the installation of railways and the strengthening of foreign relations increased the demand for imported manufacturing commodities. After a brief disruption in the Second World War period, the manufacturing sector started to get momentum in the 1950s. During this period a number of new industries which significantly contributed to the development of the national development of the national economy were established. The industrial policies have distinctive features when looking guiding vision (policy), ownership structure and market orientation. Broadly, they can be characterized as the import substitution and private sector - led (from early 1950s to 1974, the imperial regime), the import substitution and state – led (from 1974 to 1991, the Dergue regime) and the export orientation and private sector - led (since 1991, the Ethiopia people's revolutionary democratic front (EPRDF)-led government). In what follows, the salient features of the industrial policies of the three periods will briefly be reviewed.

During the imperial regime (pre-1974) there is a conscious move to stimulate industrial growth began in the mid-1950s with the formulation of the five year plan that covered the period 1958-63. The plan envisaged to achieve the industrial development through the development of import substitution light industries which produced consumer goods for the domestic market. The second five year plan and the third five year plan were launched between 1963 and 1974. During this period the government extended the incentives to attract investors and continued to strengthen its presence in economic activities by marking direct investment in manufacturing. The driving philosophy of the industrial policy in the imperial period can be characterized as a favor of market and private sector but sought gaps where by the government should play a role including direct ownership in selected sectors. According to World Bank (1985) report the implementation of these initiative attracted foreign investors and gave boost to the manufacturing sector in Ethiopia. In this period the modern medium and large scale manufacturing sector which

employs ten or more people and use power driven machinery created no more than 60,000.00 jobs in total and it was predominantly foreign owned.

During the Dergue regime (1974-1991), the Ethiopia revolution erupted while the country was prepared the fourth five year development plan. The military government nationalized most of the large and medium scale manufacturing enterprise which were later reorganized under state corporations. The government also declared the socialist economic policy (1975) and introduced various restrictions on the private sector and market. Price control was instituted covering a wide range of products and the labour market highly regulated. The manufacturing sector exhibited a sharp decline particularly in the first five few years following the revolution. In 1977/78 the government initiated a successive production campaign locally known as zemecha to improve productivity mainly through increasing capacity utilization and have partly reversed the declining trend. Nevertheless, the government has no industrial policy until mid- 1980s. A central planning body was established in 1984 and a ten years perspective plan was formulated. This comprises a macro-economic framework, public investment programme, an indicative portfolio of projects and production targets for the period 1984/85-1993/94. The main focus of the industrial development plan in this period was to promote the import substitution and labour intensive industries. The public sector investment was considered as the main mechanism in the progress toward industrialization (World Bank 1985). The state owned enterprise financial position became increasingly weak and had to rely on government subsidies and overdraft facilitates for their working capital requirements (UNIDO 1991:13). The last year of the Dergue regime sought another sharp decline in Ethiopia economy.

The EPRDF led transitional government soon after it seized power announced that the country will follow a market led economic policy. The first decade of the EPRDF regime (1991-1999), in this period the government implemented three phase of IMF/WB sponsored reform programmes. The first phase of structural and economic reform programme took place during 1992/93 - 1994/95. The second programme (1994/95-1996/97) aimed at limited the role of the state in the economic activities, promotion of greater private capital participation and strength liberalization. In 1998, the Ethiopia government adopted an export promotion on high value agricultural and labour intensive manufacturing product strategy in an effort to the address the lack of progress in export diversification. A comprehensive industrial policy was then formulated in 2002/03. The

industrial policies was more concretized into action in to various subsectors strategies and by the successive development plans such as sustainable development and poverty reduction program (SDPRP) 2002/03-2004/05, then plan of action for sustainable development and eradication of poverty (PASDEP) 2005/2006-2009/10 and the growth and transformation plan (GTP) 2010/11-2016/17 The first development plan gave a great emphasis to smallholder agriculture, while in the second and the third ones the policy scope was broadened to encompass urban and industrial sector development. The main emphasis of the IDS is to actively support the export oriented and labour intensive sectors.

The manufacturing sector any economy worldwide is reputed to be the engine of growth and catalyst for sustainable transformation and national development (Naude and Szirmai).The production formation and performance of large and medium manufacturing industries improvement is the solution for the growth of degree industrialization and national economy one countries by meaningful Reduction in the high level of unemployment and contribute to the GDP of the local economy in Ethiopia (Bayati & Taghavi, 2007).

The purpose of this paper is to examine the performance of large and medium manufacturing firms in Ethiopia from the period 2013-2017. For this purpose unbalanced panel data of 28,028 manufacturing firms are used which are listed on the central statistical agency and to identify the important variables that are influencing the performance of the large and medium manufacturing firm.

1.2. Statement of the problem

The central essence of the study is going to identify the problem associated with the performance of large and medium manufacturing firms. After the falling down of socialist regime and free market policy instrument attempt to conduct basic performance manufacturing firm production liberalization program step by step including establishment of market based policy instrument on the manufacturing firms. In general the breakdown of the financial regression policy of the Dergue regime assumed to fertile ground for performance of firm conducive and sensitive growth rate. Many expect there would be a considerable change over the manufacturing firms following the adoption of liberalization. Ethiopia like other developing countries, is confronting a host of problems that limited its economic growth. Hence the government of Ethiopia engaged in the attraction of investor's expectation to positive spill over to wards the local firms. New technology may spill over to the domestic firms as a result of to improve the performance of the local firm by sharing of the experience of the foreigners. By 2010 the Ethiopian government formulated a five-year strategic plan called the growth and transformation plan (GTP) which is aimed at fostering the development of the country by improving the performance of the manufacturing firms. The improvement of the technology capability of the different firms is an essential aspect on the process of achieving the desire target of the development. The government gives special attention to the manufacturing firms which are assumed to be contributing the growth rate of the national GDP. However the reformation the manufacturing sector policy launched might not considerable advancement on their performance. The productivity of manufacturing firms under the condition of developing countries is low where Ethiopia is not exceptional. The contribution of manufacturing sector to GDP is minimal exhibits the infant stage manufacturing activities or industrialization in Ethiopia. This low contribution of the manufacturing sector for the GDP is the common feature of developing countries.

There are inconsistent and poor performances of manufacturing firm in Ethiopia. The growth rate of Performance of large and medium manufacturing firms has been varying from industrial group to industrial group. For instance the growth rate of manufacturing of wood product except furniture is at negatively rate ranging (-149.25%) in 2013 to 2014 G.C but the performance of manufacturing of wear and apparel except fur apparel is at positively range (138.06%).This poor performance varies across firms. The average performance growth rate of manufacturing of wear

and apparel except fur apparel is positively from 2013 to 2017 that is 22.46 but the average growth rate of the performance of manufacturing of wood except furniture is negatively from 2013 to 2017 G.C that is -99.71%.In addition of the two manufacturing firms the average performance growth rate of bakery product is positive that is 32.07% from 2013 to 2017 G.C. in addition to this problem there is shortage of foreign currency and importing large amount of foreign products (goods) for consumption increases from day to day. Hence all these and other sum total problem indicates lack of good performance of the manufacturing firms.. Therefore the studies critically investigate the problem associated with affecting performance of the manufacturing sector.

Tesfaye (2015), Dr.Rama (2015) and others done their research paper by using value added per employee as measure of performance but it is not preferable measure and does not solve the problem that affect performance of the manufacturing firms. Instead of this value added per wage is the more preferable than value added per employee to measure performance of the manufacturing firms.

1.3. Objective of the study

1.3.1. General objective

To examine the various factors that affect the performance of large and medium manufacturing firms in Ethiopia.

1.3.2. Specific objective

- To examine the effect labour productivity on the performance of large and medium manufacturing firm in Ethiopia.
- To examine the effect of firm size on the performance of large and medium manufacturing firm in Ethiopia.
- To examine the effect of export intensity on the performance of large and medium manufacturing firm in Ethiopia.
- To examine the effect of import intensity on the performance of large and medium manufacturing firm in Ethiopia.
- To examine the effect of capacity utilization on the performance of large and medium manufacturing firm in Ethiopia.

- To examine the effect of Herfindahl Index on the performance of large and medium manufacturing firm in Ethiopia.

1.4. Research Questions

Accordingly, this study aims to address the following two main research questions.

1. What are the major factors that affect the performance of large and medium manufacturing firms in Ethiopia?
2. What are the effects of performance on the large and medium manufacturing firms in Ethiopia?

1.5. Scope of the study

The performance of large and medium manufacturing firm is done in Ethiopia from 2013 to 2017. The main issue of the study is to analyze the factors that affect the performance of the firm; in turn it helps for the improvement of the firm's future performance. Since these identified factors are expected to have determinant role on the firm performance.

1.6. Significance of the study

The good performance of the manufacturing firm is the crucial to the increase value added of the manufacturing firms. The finding and recommendation of this research will help to enable managers to know how they have to treat such factors in order to achieve good performance. The study will also be useful to the investors in the manufacturing firms. It will assist them with information on how various factors affecting the performance of the manufacturing firms they have or intend to invest in.

The result of this study will be useful implications for the government in formulating appropriate policies for the performance of the manufacturing firms. This study will play its own role to finding out the main factors that can affect the performance of large and medium manufacturing industries of the Ethiopian and suggests policy and strategy for the sector development. This research is expected to provide significance for the researcher to build a good understanding of the study area. Furthermore, to the researcher's knowledge, there is no research conducted to investigate the performance of large and medium manufacturing industry by using CSA survey data from 2013 to 2017 at the national level in Ethiopia. Thus, it was added the value to the already existing stock of knowledge and supplemented the existing empirical literature from the

Ethiopian perspective. And, the findings of this research may contribute for other researchers who want to conduct research in the same area.

1.7. Organization of the study

This paper consists of five parts. The first part of this study introduction and the background of the study, statement of the problem, general and specific objectives, research question, scope of the study, significance of the study, the second part presents a review of literature and relevant theories as well as empirical evidence, the next chapter three examines the research methodology, tools and procedure used for data collection and analysis. The fourth part is analysis of the data and presentation of the result of the study and the last chapter five dailies about conclusion and recommendation of the research.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Concept and Definition

In this literature pay attention on measure of performance in the manufacturing sector by using different factors of performance measure such as export intensity, capacity utilization, import intensity, firm size, Herfindahl Index (HI) and labour productivity (Bernolak, (1997). Value added per wage is an appropriate measure of firm performance that derive the economic growth more productive economy.

Herfindahl Index is a comprehensive criterion in order to assess the performance of firm because the ultimate objective of the firm is profit. Whereas this matter must be considered that firm's environmental elements can influence on profitability and some time there is no strong relationship between firm performance and its Herfindahl Index. Hence only relay on Herfindahl Index indicator to evaluate firms performance many not seem sufficient.

Tzortzopoulos *et al* (2005) discussed the different process models to enhance the effectiveness and efficiency the manufacturing firm activities in response to the need for improving performance. In contrast Begum *et al* (2009) study related to the attitude and behaviors of individual involved in the manufacturing firm which influence its economic growth and performance. Furthermore, Ibrahim *et al* (2010) explain the production process by the manufacturing firm. That study analyzed the global manufacturing firm focusing on the evolution of lean production systems. In relation to identify the importance for all of these industries, using the production theory we could analyzes the relationship between the production factors used and the production itself. Production is the process through which input are combined and transformed in to output. Hence productivities provide the technical relationship that exists between input and output (Diewert, 1992). Productivity represents the efficiency with which physical inputs are converted to useful outputs. It measure the relationship between output such as goods and service produce and inputs that include labor, capital, material and other resources (Hill, 1993).It is the central long run factor determining any population's average of the living (Thurow, 1993). The level of productivity with an organization depends on

export intensity, labour productivity, import intensity, capacity utilization, and Herfindahl Index and Firm size. Productivity growth over the time will reflect the growth in these factors over the time. The most commonly measure of value added per wage usually used is labour productivity, Herfindahl Index (HI) and export intensity. Labour productivity performance actually influenced by other factors such as capital equipment, new technology and improved management skill. Changing pattern of factor use and changing the quality of workforce also influence labour productivity. These changes have significant an effect on outputs (Barrel, 2000). Productivity is also an indicator of technical efficiency because it shows the relationship between outputs and labour inputs given the technology within the firm. labour productivity is generally analyzed in the context of multifactor productivity. In a way value added per wage is used in this paper as one of the performance measurement. Indeed value added shows the ability of an organization in creating wealth and this wealth shared among stakeholders. So the value added is the base for the productivity measures which leads to the performance of the organization. In addition, capital productivity as value added per wage unit of capital stock and multi factor productivity as a weight average labour and capital productivity can also be used.

The definition of organizational performance with respect to a firm differs depending on the overall goals. The chosen definition also impacts how performance is measured. It is important to understand the multidimensional nature of performance constructed while measuring the performance of a firm (Lumpkin & Dess, 1996). There are predefined methods for measuring the performance of a firm.

Measuring all of the export intensity, market share, firm size, overall performance and stock holder satisfaction will provide a more accurate view of such firms' performance. Covin and slevin (1989) uses financial measure as sale level, sale growth rate, cash flow, return on share holders' equity, labour productivity, export intensity, capacity utilization, net profit margin, value added per wage and return on investment and ability to fund business growth to represent performance for both for the growth the financial perspective. It is impossible to regard the financial performance and growth as different aspect of performance. However performance is a broader term that covers both overall economic and operational aspects. It includes almost any objective of competition and manufacturing excellence whether it related to cost, flexibility, speed, dependability or quality. Moreover performance can be described as an umbrella term for

all concepts that consider the success of a company and its activity (Thomas & Baron, 1994). In this injection, triple-P model (productivity, profitability and performance) can be described; the concept of productivity is purely a physical phenomenon. Profitability is also seen as a relationship between output and input but it is monetary relationship in which the influences of a price factors are included. Performance is the umbrella term of excellence and includes profitability and productivity as well as other non-cost factors such as a quality, speed delivery and flexibility (Grunberg, 2004). Various productivity measures can be computed depending on the treatment of inputs and output. Single factor productivity ratios such as labour productivity or capital productivity, give output per unit of a single input type. Multi-factor or total factor productivity ratio take in to account the fact multiple inputs are jointly used (Coelli, Rao & Battese, 1998, Liberman, Lau & Williams, 1990, Mammone, 1980).

Capacity utilization is the relationship between output that produce with the install equipment and the potential output which can be produce with full use of the capacity. Several nations already were developed measure of capacity output on the basis of the physical attributes of the fleet and were implement capacity reduction policy on the basis of capacity measure (Kirkley et al. 2002).Capacity utilization is the metric use to calculate the rate at the prospective level of output is being meet use. The rate is display as percentage and provides an insight into the total utilization of resource and how company can increase the output without increasing the cost associate with production. Capacity utilization (maximum output rate) that a company can attain in its manufacturing system is another important key-factor. Companies often need to match the capacity to the current demand rate from the customers. Idris and Rahmah (2009) condition that if capacity is higher than need; some of the company's resources were not use and in turn reduce productivity.

2.2. Theoretical Literature Review

Theories form a foundation upon which a research is built. They entail a collection of relate concepts which guides the researcher in determining what was measure in drawing the relationship between variables. Theoretical framework establishes the importance of the topic by providing information needs to understand the study. Performance measure practice has not emphasized by the researchers.

2.2.1. The neoclassical theory

The neoclassical theory postulates that a firm is an abstraction a perfect of business whose existence is explained exclusively by the pure economic motive of generating profit. The neoclassical firm's objective as thus principal profit maximizing or cost minimizing, However according to neoclassical theory a firm is a corporate entity operating in an exogenous environment with many factors which lie beyond the firm's control. This by implication means that profit as a motivation for the firm growth and the purpose of its existence is determined by external factors beyond the firm control (Sangosanya, 2011, Citing Bernadette and David, 2005).

2.2.2. Heterogeneous theory of manufacturing firms

Heterogeneous firm's theorist Helpman and Krugman (1985) published a homogenous trade approach based on comparative advantage where firm productivity is constant for all firms and when trade liberalization increase , either all or no firms export. It came to be one of the most influential approaches to trade research during the 90's. As the amount of firm level data increased during late 90's, Melitz (2003) published heterogeneous firm approach where he argued that international trade participation might be explained from firm behavior. He argued that there is an entry cost associated with selling at the international market consisting of per unit costs (such as tariffs) and fixed cost (such as acquiring information). When low productive firm decide to sell at the international market they pay an entry fee and can then decide to exit immediately or continue to sell. Thus there is a productivity verge firms need to surpass to stay at the international market otherwise they are forced to exit. In heterogeneous firm setting most firm do not export and those that do are typically large and highly productive (Melitz, 2003). Wagner (2007) made an effort to explain this concept in 2007 when he compared with different published paper. He found a positive correlation between engaging in export and high productivity but that high productive firms self-selected in to exporting, leaving low productive

firms. Hansen (2010) put numerical value on his results. He found that exporters are 40% more productive than non-exporters and that average productivity is 1% higher for exporters. This also due to high productivity firms self-selected in to export. De Loecker (2007) on the other hand argues that self-selection has been shown that export manufacturing firms become more productive than non-exporters due to a learning effect from the engaging the export. Hence firms engage in exports acquiring knowledge about the characteristics and demands in the international market, which in turn generate a productive enhancing effort on the amount of exports. Furthermore, he found that firms exporting to the high income regions experience a larger productivity effect and that productivity gap between exporters increase over a time.

Export intensity is measure as the ratio of the aggregate export sale to total firm sale. Aggregate export sale are revenue generated by the export of domestically produced goods and service provided by domestic office. Firms can minimize the capital necessary to enter other markets through exporting. The amount of money that is necessary to enter the market via exporting is considerably less than other means of market entry (Cannon, 1981, Tookey, 1064). In heterogeneous theory firms setting most exporters are two way traders, meaning that they both import and export (Jienwatcharamongkhol, 2014). In the past researcher focused solely on the relationship between export and firm productivity (performance). Recent finding, however elucidate the importance of engaging in import as a way of increasing firm productivity on the amount of exports. Andersson, Johansson and Loof (2007) found that importing firms higher productive than non-importers in the manufacturing sector. Jienwatacharamongkhol (2014) found a productivity enhancing effect from engaging import on the amount of export in the manufacturing sector due to learning effect where import stimulate learning and leads to firms exporting more. He argues that import experience might be a good proxy for current exports as more imports as usually imply a large amount of exported goods in the future. Also in terms of policy reform firms with previously import experience can exploit benefit from productivity reform more efficiently. Heterogeneous firm approach where importers are more productive than non-importers.

According to Schultz (1993), human capitals has been defined as a key element in improving a firm asset and employees in order increase productivity as well as sustain competitive advantage. To sustain competitiveness in the organization human capital becomes an instrument

professional initiative in order to increase the levels of knowledge, skill, abilities, values and social assets of an employee which will lead to the employee satisfaction and performance and eventually on a firm performance. Rastogi (2000) stated on human capital is an important input for organizations especially for employees continuous improvement on knowledge, skill, and abilities. Human capital contains the ability of knowledge, experience, skill and talent of firm's personnel (Huselid *et al*, 1997). Labour productivity (human capital) is one of the fundamental factors that affect firm's performance and value. Boothby *et al*. (2010) argue that the higher quality (greater skilled) human resource generate a greater labour input than lower quality human resource. Labour productivity positively related with firm's performance. In country level, Miller and Upadhyay (2000) find that human capital has a positive impact on productivity. Thus good labour productivity and efficient using of the capital can improve productivity and finally performance.

Market concentration measured by Herfindahl index (HI) is the good indicator of the extent of computation among firms. Two different industries may exhibit distinct productivity level even if they have similar technical efficiency because of the different domination of the market (Bomstrom and person 1983). Increase in the Herfindahl index (HI) generally implies a decline market competition and rise market power, whereas decreased show the other way round. The efficiency structure hypothesis states that performance of the firm is positively related to performance. The positive relation relationship between firm profit and market structure is attributed to the gain made in market share by more efficient (performed) firms. In turn these gains lead to increase the market concentration. That is the increase profits are assumed to accrue to more efficient firm because they are more performed efficiently (Molyneux and Forbes, 1995).

2.2.3. Exceptional theory of industrialization

Exceptional theory of industrialization (manufacturing firm) has been associated with failing relative returns to skill (Galor and Weil 2000, Jones 2001). This fact is at odds with most theory of industrialization, which tends to imply rising skill premia as natural concomitant to economic growth. Assuming human capital as consumption goods and investment goods, the theory demonstrates how rising education levels, non-monotonic fertility rate and falling skill premia.Goldin and Katz (2008) suggest a general pattern of falling premia prior to 1950,

relatively stagnant premia from 1950 to 1980, and rising premia only after 1980. Thus historically industrialization appears to be conducive to falling returns to skilled labor relative to the returns to unskilled labor.

2.2.4. Operational theories of performance

operational economic theory state that firms that are incurring losses exit the market and the one that are profitable stay in Silveman, Nickerson and freeman (1997) suggest that firm's performance is correlated with its survival especially during tough economic times. The theories suggest that a positive relation between the market performances and overall business survival, moreover longer business survival tends to be positively related to be the greater sales. This was observed in larger companies which were the older ones and also had lower exit rates (Evans, 1987). Jovanovic (1982) finds that the entry size of the firms may be small but firms are successful it will eventually expand. This implies longer business survival is directly linked to greater operating performance and size (Jovanovic, 1982). There have been studies on the type of exits are in fact affected by the weak firm performance (Evans, 1987), Aldrich and Auster, 1986). Specialized product industries or customer drive industries tend to lose their sales in the time of economic distress (Titaman and Wessel, 1988). This is more severe if these firms invest heavily in research and development. According to Titman and Wessel (1988) research and development is implied indicator of the firm's specialization. Firms with specialized product are more likely to be sensitive to the financial distress due to the customer lost sales in comparison to the other firms (Opler and Titman, 1993).

2.2.5. Proto industrialization theory

Proto industrialization theory of firm is the first step of industrialization. The term proto industrialization was invited by Franklin Mendels and first used in his 1969 doctoral dissertation on the Flemish linen industry (1969/1981). For Mendel proto industrialization was the first phase of industrialization. Pre industrial industry he argue preceded and prepare modern industrialization proper Mendel (1972:241). During his proto industrial phase rural labour force became involved in domestic industries produced for supra- regional markets. The population was liberated from the agrarian resource base and labour which had previously been unused because of the seasonal nature of agrarian production found employment. Subsequently in order for production to expand further, specialization into regions of rural industry and commercial

agriculture became necessary. Mendel took for granted that all of early modern Europe (not just Flanders) saw the decline of traditional urban and guild regulation industry, as manufacturing moved into the unregulated countryside. According to Mendels proto industrialization also broke down the traditional regulation mechanisms of agrarian society inheritance growth to available economic resource. For the region of Flanders which he studied, Mendels sought to show the period of economic upturn proto industry led to an increase the number of marriage and this increase was inevasible that is even the period of economic downturn, the marriage rate don't decline again. This he argued generated higher fertility and rapid population growth which in turn led to further expansion in rural domestic industries. It was this self-sustaining proto industrial spiral Mendels argued which ultimately generated labour, capital, entrepreneurship, commercial agriculture and supra regional consumer markets required for factory industrialization.

2.2.6. Firm size theory

Traditional theory which focused on company's profit, although importance of profit is unquestionable, complexity of internal and external variables lead to separation of ownership and managerial functions and consequently development managerial theories. Three most significant managerial firm theories are those formed by Baumol, Williamson and Marris which regarded maximize revenue, utility and growth as firm's objective. Those theories assume manager goal likely to be different from owners which results development of principal agent analysis (Foss, Lando and Thomsen, 1999). The Cyert, March and Simon are responsible for development of the behavioral firms theories which belong to the group of firm theories which think of firms as a multi-purpose organizations. The above theories determine connection between firm size and performance or to be more precise profitability. Focus of firm theories is boarder than explaining reasons for difference in firm performance. The theory of firm size on profitability says there is a positive relationship firm size and performance was found by Vijayakumar and Tamizhselvan (2010). The effect of firm size on the profitability has been examined by several studies since the famous of effect of size and growth conducted by Gupta (1969). Size has been found to be vital factor in determining profitability through the capital structure decision. After that size was included as one of the firm's specific factor by many scholars in their studies. Most of the study found that a positive relationship between firm size and firms performance (Dogan, 2013). As well as theoretically also firm size explores positive relationship with the performance (value

added per wage) according to the economic scale. Onaolapo and Kajola (2010) performed a capital structure and firm performance research and they examine the impact of capital structure on firm performance. Asimakeopoulos *et al* (2009) explore that the large firms measured in terms of total sale are more performed compared to small firms. Due to the economies of scale of the large firms enjoying more profit and take advantages on negotiating the price of inputs and quantity of output.

However theoretically also firm size explores negative relationship with the performance (value added per wage) according to the economic scale, Lee (2009) relationship was nonlinear meaning that gains in profitability reduce for larger firms performance. Amato and Burson (2007) explore that the large firms measured in terms of profitability are less performed compared to small firms.

2.3. Empirical Evidences

Lee (2009) examined the role of that firm size plays in profitability. He used fixed effect panel data model and performed analysis on the sample of more than 7000 US publicly held firms. The result shows that absolute firm size plays an important role in explaining profitability. However this relationship was nonlinear meaning that gains in profitability reduce for larger firms. Amato and Burson (2007) tested size profit relationship for firms operating in the financial service sector. The author examined Linear a form of relationship. With the linear specification in firm size the author's revealed negative influence firm size on its profitability.

Study on the performance of manufacturing sectors in Tanzania(Mboghoina, 2014) showed industrial development back to be one of the policy priorities. The 20-year industrial strategy was devised to improve the nation's industrial base. Specifically, it adopted the tenets of a basic industrial strategy aimed at increasing the relative importance of the manufacturing sector and reducing dependence on imports. The Basic Industrial Strategy (BIS) was adopted for its score on structural change and self-reliance. Industrial goods were to meet basic needs of the population, and the intermediate and capital goods of the economy. The latter was to be achieved through efficient utilization of domestic natural resources to produce a wide range of intermediate and capital goods. Industrial production was primarily targeted to meet domestic demand. Exports were to result from an extension of the domestic market. The share of the

manufacturing value added (MVA) in GDP was projected to grow from 8 per cent in 1975 to 18.8 percent in 1995.

Tanzania's manufacturing sector has been transformed over time, reflecting changes in national policies, varying domestic demand and the world market dynamics. Importance of the manufacturing sector to the national economy has varied across different periods since independence, however, in the recent years its contribution to the national income and hence its importance has been on the rise. Industrial structure, policy, output composition and magnitude have experienced notable changes over time.

The environment in which industrialization occurs keeps changing. Fast technological change, globalization of production systems and the emergence of new competitors create a completely new context for sustainable industrial development (URT 2012). This is a challenge for the countries that are yet to realize their industrial potential, where manufacturing contributes less than what could actually have been the case at full capacity. Although Tanzania is in this challenging group, the manufacturing sector has been evolving in recent years and so its MVA growth is currently higher than that of most of comparative nations

Although Ethiopia has emerged as one of Africa's fastest-growing economies, its manufacturing sector is still far from being an engine of growth and economic transformation(Arkebe, 2018). It currently plays a marginal role in employment creation, exports, and output, and falls short on stimulating domestic linkages. The sector is dominated by small firms and resource-based industries, low-value and low- technology products, and weak inter- sectoral and intra-sectoral linkages. The manufacturing sector's export orientation has been low and stagnant. The paper provides an in-depth analysis of the structure and performance of the Ethiopian manufacturing sector and further explores the reasons behind the 'paradox' of the slow growth of industrial outputs and structural shifts. Since the mid-2010s, however, there are some promising signals that the manufacturing sector might be coming out of its doldrums and showing positive dynamics.

In Morocco exporting firm pay higher wage and hire more workers than non-exporters. The other establishes a positive link between exports, wage and skill utilization at the industry and firm levels. These associations are the consequence of the combination of the act of exporting and of some inherent attributes of firm or industries such as productivity, performance,

production technology, efficiency or various types of constraints (Hobdari, 2010). For the U.S. Bernard and Jensen (1995) and Bernard and Jensen (1999) argue that while at a point in time exporters outperform non exporters the evidence on the benefit of export experience to the plant is mixed. Exporters perform significantly better in the short run than non-exporters. In terms of employments growth however, short run wage growth and long run performance in all areas are negatively correlated with export intensity.

Shubita and Alsawalhah (2012) studied 39 listed Jordanian industrial companies' data to examine the effect of capital structure on profitability with size as a control variable during six year period (2004-2009) in Jordan. That study result also revealed that profitability increase along with the control variables of size and sale growth. Akbas and Karaduman (2012) studied the effect of the firm size on profitability on the firms operating in manufacturing sector, listed in Pakistan for the period from 2005 to 2011. The result of the study revealed that firm size has a positive effect on profitability (performance).

Blease *et al* (2010) examine the relationship between firm size and profitability within SIC four digit manufacturing industries in the U.S. however; they found that in up to 47 industries profitability increase with size at a decreasing rate until it eventually start to decline and that there is no relationship between profitability and size in up to 52 industries. These two category account for 97 of the 109 industries under the study, On the contrary in up to 11 industries profitability continues to increase a business become larger. The authored also revealed that profitability has a negative correlation with the number of employees for firms of a given size when size is measured in terms of firms' total assets and its sales.

2.4. Manufacturing Industries in Ethiopian Context

Stephen and Wasiu (2013), finds that in defining large and medium scale enterprise, and industries references are made to qualitative and quantitative measures on the basis of the number of people employee in the enterprise or industries, investment out lay, annual sales turn over or a combination of these measures. In light of this, the definition and classification of industries in our countries context are discussed as follows. This classification of industrial company or enterprise is based on, the new (Large and medium Enterprise Development Strategy of Ethiopia [LMEDSE], 2011). Principally this Classification of the size of industrial company is on the basis of man power (work force) and 11 capitals (This capital includes machinery cost and

working capital and exclude land and building cost of an industrial company). The arrangement the definition are as follows: Micro Enterprises an enterprise that consists employees including the owner or family is not greater than 5 and total asset is less than 100,000 ETB for industrial sectors. Small scale manufacturing is industrial company that employee 6-30 workers or and its total asset is 100,001 up to 1.5milion (one point five million) ETB, Medium scale industries an industrial company that employee 31-200 workers and its total asset is 1,500,001 up to 30,000,000(thirty million) ETB and Large scale industries an industrial company that employee more than 200 workers and its total asset is more than 30,000,000 (thirty million) ETB.

The government of Ethiopia has design and implement long, medium and short term plans to mitigate poverty and ensure rapid and sustainable economic development in multiple sectors. To ensure accelerate and sustainable economic development, the government believes that industrial growth is a fundamental tool. Accordingly, design Industrial Strategy and five years‟ Growth and Transformation Plan (GTP), which is expect to accelerate the transformation from agriculture to industry-led economy. Based on GTP of Manufacturing industry sector textile and garment, leather industry, Agro-processing, pharmaceutical, chemical, metal industry and Meat & milk industry were the prioritize sub sectors. So far, different supports and co ordinations the above sub sectors have made to achieve the GTP goals.

The Government of Ethiopia has given emphasis to ensuring fast and sustain development of industrial sector in its Growth and Transformation Plan (2010/11 -2014/15).

Investment guarantees and protections

The Constitution and other laws of the country protect private property. Investment Proclamation No. 769/2012 Says, the encouragement and expansion of investment especially in the manufacturing industries has become necessary so as to strengthen the domestic production capacity and there by accelerate the economic development of the country and improve the living standards of its people. The proclamation further states by supporting a foreign investor have the right to make the following remittances out of Ethiopia in convertible foreign currency, Profit and dividends, Principals and interest payments on external loans, Payments relate to technology transfer agreements, Payments relate to collaboration agreements, Proceeds from the sale or liquidation of an enterprise, Compensation paid to an investor and Proceeds from the sale or transfer of shares or partial ownership of an enterprise to domestic investor. Moreover, to make the growth of industry sustainable and effective in the country Ethiopia becomes member of the:

- Multilateral investment guarantee agency (MIGA), a world bank affiliate, which issues guarantee against non-commercial risks in signatory countries
- World intellectual property organization

In addition, the country has signed double taxation avoidance treaties with Algeria, Romania, Czech Republic, Russia, China, Seychelles, Egypt, South Africa, France, Sudan, India, Tunisia, Israel, Turkey, Italy, United Kingdom, Kuwait, Yemen.

Investment Incentives

The Council of Ministers Regulations No.270/2012, the amendment investment incentive and investment areas regulation No.312/2014 and Investment Proclamation No.769/2012 specifies the areas of investment eligible for investment incentives. The areas of investment eligible for investment incentives include: Tax incentives, import duty exemptions, tax holidays, etc.

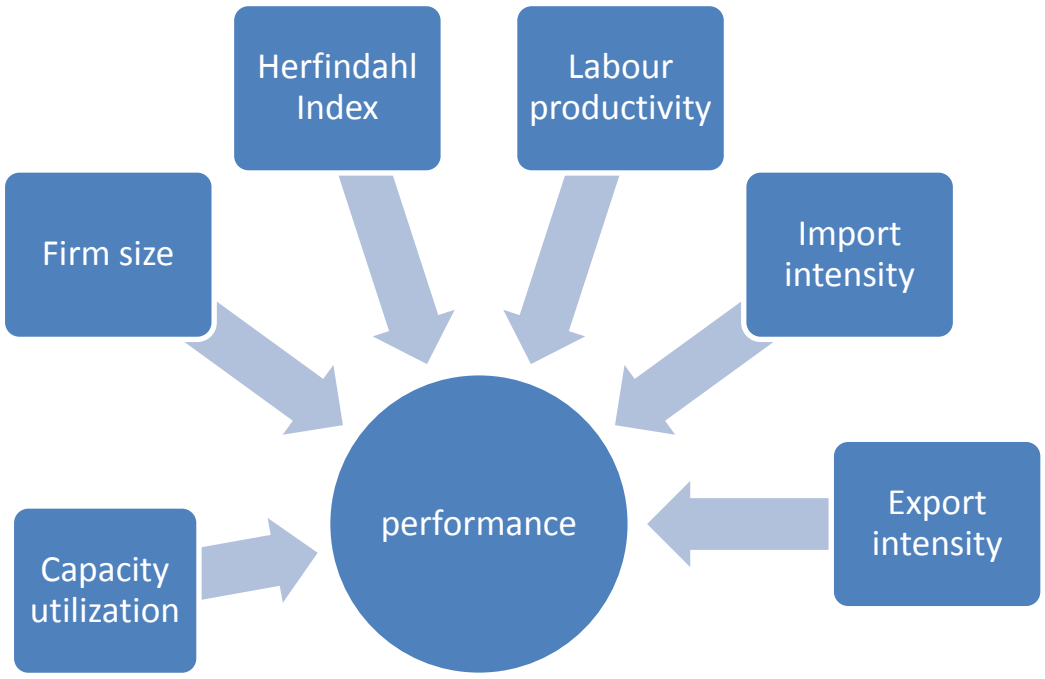
Fiscal Incentive

Based on above mention regulations and proclamation the following incentives are giving to investors. To encourage private investment and promote the inflow of foreign capital and technology into Ethiopia the following customs duty exemptions are provide for investors (both domestic and foreign) engaged in eligible new enterprises or expansion projects in manufacturing industries.

2.5. Conceptual framework

Past research has examined various determinants of firms‟ performance, including elements of environments, firm strategy and organizational characteristics. Financial performance variables include widely-use measures, embracing levels, growth and variability in profit, typically relate to assets, investment or owner's equity (Capon, Farley and Hoenig, 1990). But this study considers different factors that hinder the performance of the large and medium manufacturing firms in details. Thus, Business success/performance of large and medium industry is the dependent variable and independent variables are Herfindahl Index (HI), capacity utilization, labor productivity, Firm size, import intensity and Export intensity. On the basis of these factors of performance a following conceptual frame develop for the research.

Figure 1. Conceptual framework



Source: Own by examining different literature

CHAPTER THREE

3. METHOD OF THE STUDY

3.1. Research design

The data set indicate the annual survey of large and medium scale manufacturing industries. The survey is census of manufacturing firms conducted on both public and private enterprise in all the regions of Ethiopia. The study has use survey data collected by CSA in 2013 to 2017. The CSA survey data includes manufacturing sectors which engage more than ten employees and hence this research was includes manufacturing industries that engage 10 and more persons. The range of collect data items include distribution of manufacturing industries across the state of the country, volume of fixed investment in the sector, gross and value add at production levels, number of persons was engage and wages and salaries of employees. Other derivative data like capacity utilization, labor productivity, Export intensity, import intensity, Herfindahl Index (HI) and economies of scale were compute. The trend in value added per wage unit measured the performance of large and medium industries. In addition, the factors that determine the performance levels were identify and their relative influence on the performance was also analyzed. Fixed effect regression model is applies to analyze the trend in performance and its determinants. Fixed effect regression model is prefers for the purpose as it helps to analyze the net impact of the time variant variables by controlling (minimizing) the influence of the other time invariant variables (Green, 2003).

3.2. Model specification

In this study consists of performance of the manufacturing sector from the period 2013 to 2017 CSA survey data whereby 28,028 of the manufacturing firms are considered for the defined period of time (5 years). The model captures how different firm's specific variables as well as variables feed into the overall performance of the manufacturing firms. The model used in this study analysis of the firm performance considering the value added per wage as the dependent variable while labour productivity, firm size, export intensity, import intensity, capacity utilization and Herfindahl Index (HI) variables were considered as the independent variables. These are captured by the error term in the model. Both the random and fixed effect model out and the probability value (p-value) of Hausman test was greater than the alpha (α) at a level 5%

the study failed to reject the random effect is appropriate. Therefore the fixed effect is not appropriate and we use the random effect model to run out unbalanced panel data from the analysis. The model adopted assumes an underlying the relationship between the variable expressed in a functional form and the value added per wage (performance).

The nature of the data was used in this study enabled to the panel/longitudinal data model which is deemed to have advantage over cross sectional and time series data methodology. Panel data involves the pooling of observations on the cross sectional over several time periods. As Brook (2008) stated on the advantages of using panel data set, first and perhaps most importantly it can address a broader range of issues and tackle more complex problems with the panel data than would be possible with pure time series or pure cross sectional data alone. Thus the general panel/longitudinal regression model as follows.

$Yit = \beta 0 + \beta 1 Xit + \alpha i + \varepsilon it$ …… (1)

With subscript i denote the cross section and t representing the time series dimension. The left hand variable Y_{it} is the dependent variable α is the intercept term β is a kx1 vector of parameters to be estimated on the explanatory variables and Xit is a 1xk vector of observations on the explanatory variables, t =1,2….., T, i = 1, 2,…..N.

The model is simplified below

VAD = f (HI, LP, EX, II, CU, FS, Z)

Where Z contains other variables not explicitly included in the model

The explicit from of equation (1) above is represented as follows:

VAD = β0 + β1HI + β2LP + β3EX + β4II + β5CU + β6FS + εit …… (2)

VAD: value added per wage

HI: Herfindahl Index

LP: Labour productivity

EX: export intensity

II: import intensity

CU: capacity utilization

FS: firm size

β0: constant term and β1 to β6 are the coefficients of the explanatory variables at time t

εit: The error term

Betas (β) are the parameters of the models. In addition, with subscript i denote the cross section we note that i = 1, 2, 3… 28,028 since we analyzing 28,028 firms while t representing the time series dimension, t = 1, 2, 3… 5 since our analysis capture five years from 2013 to 2017.

Based on the theoretical and empirical evidence labour productivity, Herfindahl Index, export intensity, import intensity and capacity utilization positively influence the performance manufacturing firm but firm size negatively influence the performance of the manufacturing firm. The study considers large and medium manufacturing firm in Ethiopia, panel data modeling is appropriate in order to capture the heterogeneity and firm specific of determining the performance (value added per wage). The panel model controls the effect of unobserved variables of difficultly of each firm. In order to use panel data the number of cross-section exceed the number of years as N>T, therefore the paper employs panel data model. The fixed effect estimated methods are within group method, between group methods, least square dummy variable method and first difference method. Within group and first difference method eliminates time invariant characteristics and heterogeneity character of cross-sections so that they can us to examine the net effect of explanatory variables that vary over a time. Between estimators method captures to test time effect and long run effect as it considers the average value but Within-effect captures to test individual effect and short-run effect as it is a deviation from actual observation.it is also possible to reformulate from equation 1 in terms of the mean value of each variable within the group of each firm in order to catch up the long run effect in the model, it is said to be the between or time effect model.

$$\bar{Y}i = \beta\mathbf{0} + \beta\mathbf{1}\bar{X}\,\mathrm{i} + \alpha i + \bar{\boldsymbol{\varepsilon}}\mathrm{i} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

αi Is an affected as it has unique characteristics to each country over time remain the same over time. The coefficient in equation indicates the long run impact of explanatory variables on outcome variable subtracting equation 3 from equation 1 gives fixed effect within group model that capture individual effect as

$$Yit - \bar{y}i = \beta1(\boldsymbol{xit} - \bar{\boldsymbol{x}}\boldsymbol{i}) + (\boldsymbol{\varepsilon it} - \bar{\boldsymbol{\varepsilon}}\boldsymbol{i}) \text{----------} \quad (4)$$

The new error term is uncorrelated with the explanatory variables. This difference equation can be estimated by OLS, even though αi is not observed. The omitting variable αi does not change,

so it cannot be determinant of the change in Y. Using the within estimation we can still assume individual effects, although we no longer directly estimate them.

Taking first lag value

$Yit-1=\beta 0+\ \beta 1\text{Xit}-1+\alpha i+\boldsymbol{\mathcal{E}}\text{it}-1$ ---------- (5)

Subtracting equation 5 from equation 1 we will get first difference method of fixed effect model

$Yit-Yit-1=\beta 0+\ \beta 1(\text{Xit}-\text{Xit}-1)+(\boldsymbol{\mathcal{E}}\text{it}-\boldsymbol{\mathcal{E}}\text{it}-1)$ ---------- (6)

New error term is introduced new problem of autocorrelation and also in equation 6 the trend component is removed.

In fixed effect model the error terms are not correlated by assumption. But if the error terms are correlated the fixed effect model is not appropriate. Therefore, random effect model can be used for treating the situation where the error terms are correlated. The random effect model equation is $Yit=\beta 0+\beta 1\text{Xit}+\boldsymbol{v}\text{it}$ ---------- (7)

The random effect model attempts to deal with the unobserved component αi is treated as a component of the random error term. αi is the element of the error which varies between group but within groups. $\boldsymbol{\mathcal{E}}$it is the element of the error which varies over group and time.

$$\boldsymbol{v}\text{it}=\ \boldsymbol{\mathcal{E}}\text{it}+\ \alpha i$$

To account for heterogeneity, we estimate Var(αi). If we have large variance for this unobserved random heterogeneity as compared to Var ($\boldsymbol{\mathcal{E}}$it)

If $\sigma^2\alpha>\sigma^2\boldsymbol{\mathcal{E}}$ there is heterogeneity so that random effect model is recommended.

If $\sigma^2\alpha<\sigma^2\boldsymbol{\mathcal{E}}$ there is not scholastic heterogeneity so that fixed effect model is recommended.

When we select random effect model, it is also possible to capture the interaction of both time and individual effect.

Table 1 Description of the variable used in the regression model

	Variables	symbols	description	Expected sign
Dependent	**value added per wage**	**VAD**	**the ratio of value added To total wage**	**N/A**
Independent	**Herfindahl Index**	**HI**	**Sum of squaring each Market share**	**positive**
	Labour productivity	**LP**	**ratio of output per period Number of employee at work**	**positive**
	Export intensity	**EX**	**ratio of aggregate export sale Total sale of firms**	**positive**
	Import intensity	**II**	**ratio of imported raw material Used to value of output**	**positive**
	Capacity utilization	**CU**	**ratio of actual level of output To the maximum level of output**	**positive**
	Firm size	**FS**	**Log of total asset of the firm**	**positive**

Definition of variables

The operational definition of dependent and independent variable is presented under this section.

Dependent variable

Value added: value added is commonly used as the measure of the output. It represents the wealth created through the organization's production process. The term value added described the enhancement a company gives its product or service before offering it to customers. It can be considered as an extra special feature added by a company or producer to increase the value of a product or service. Value added applies to instances when a firm takes a product that may be considering homogeneous with few differences from that of a competitor, if any and provides potential customers with a feature or added on that gives it a greater perception of value. Added value to a products and service is a very important as it provides consumers with an incentive to make purchase, thus increase a company's revenue. In this case it is measured by the difference

between sales and the cost of material and service incurred to generate the sale. It is computed by deducting purchase cost of inputs intermediate goods and service from total sales.

Value added per wage is the ratio between value added and wage.

Value added per wage = value added/wage

Independent variables

Export intensity: is measure as the ratio of the aggregate export sale to total firm sale. Aggregate export sale are revenue generated by the export of domestically produced goods and service provided by domestic office. Firms can minimize the capital necessary to enter other markets through exporting. The amount of money that is necessary to enter the market via exporting is considerably less than other means of market entry (Cannon, 1981, Tookey, 1064)

Import intensity: is simply defined as the degree of the value addition of an imported item that subsequently gets exported. Import intensity is the ratio of real expenditure on imported inputs to real expenditure on total inputs.

Herfindahi index (HI): Market concentration measured by Herfindahl index (HI) is the good indicator of the extent of computation among firms. Two different industries may exhibit distinct productivity level even if they have similar technical efficiency because of the different domination of the market (Bomstrom and person 1983). Increase in the Herfindahl index (HI) generally implies a decline market competition and rise market power, whereas decreased show the other way round.

Labour productivity: Is concerned with amount (volume) of output that is obtained from each employee. It is a key measure of business efficiency particularly from firms in which the production process is labour intensive. Labour productivity is also known as workforce productivity, is defined as a real economic output per labour hour. Growth in labour productivity is measured by the change in economic output per labour hour over a defined period. Labour productivity is the ratio between a volume measure of output and measure of input uses.

Firm size: In an industry there are firms of varying sizes. The cost of production in these firms of different sizes varies. Researchers concerned with the best size a business unit that is a firm in which the average cost of production per unit is the lowest. Firm size is defined as employees per establishment, employee per company, sale per firm and value added per firm. Firm boundary is defined as the legal entity of firm in accordance with Harts (1986) definition of firm.

Capacity Utilization: refers to the manufacturing and production capabilities that are being utilized by a nation or enterprise. The creation involves at any given time. It is the relationship between the output produced within the given resource and the potential output that can be produced if capacity was fully used. Capacity utilization can also be defined the metric used to calculate the rate at which the prospective levels of output are being met or used. Capacity utilization or capacity utilization is the extent to which an enterprise or nation uses its installed productivity capacity. It is the relationship between output that is produced with the installed equipment, and the potential output which could be produced with it, if capacity fully used. The rate is displayed as a percentage and provides an insight into total utilization of resources and how a company can increase its output without increasing the costs associated with production. The capacity utilization rate is an important indicator for companies because it can be used to asses operating efficiency and provides an insight into cost structure. It can be used to determine the level at which costs per unit go up or fall. When there is a rise in output, the average cost of production will decrease. This means that the higher the capacity utilization, the lower the cost per unit, allowing a business to gain an edge over its competitors.

3.3. Estimation Method /Method of Analysis

The study use survey data collection by CSA from 2013 to 2017, systematically was organized, tabulated and summarized in items based on tables and charts. The study was employed by using STATA 14 to analyze the collected data. In this study, since independent variables are firm size, Herfindahl index (HI), export intensity, labour productivity, capital utilization and import intensity. The range of collected data items was include distribution of large and medium manufacturing industries across the state of the country, volume of fixed investment in the sector, gross and value added production levels, number of persons engage and wages and salaries of employees. Other derivative data like capacity utilization, export intensity, labour productivity and economies of scale were computed. The trend in labor productivity in real value added unit measured as an indicator for industrial performance. In addition, the factors that determine the performance levels were identified and their relative influence on the performance was analyze. Panel data model was applied to analyze the trend in performance and its determinants. I could identify whether to use fixed effect or random effect by using Hausman test. Hausman tests states for the statistical significance of the difference between the coefficient

estimates obtained by fixed effect and random effect under the null hypothesis that the random effect estimates are efficient and consistent, and fixed effect estimate are inefficient.

The test has a Wald test form and usually reported in chi-square form with k-1 degrees of freedom (k is the number of regressor).

If W < critical value then random effect is the preferred estimator.

If W > critical value then the fixed effect is the preferred estimator.

3.4. Post estimation test

3.4.1. Autocorrelation

Autocorrelation is the mathematical representation of the degree of similarity between a given time series and lagged version of itself over successive time intervals. Autocorrelation is a characteristic of data which shows the degree of similarity between the values of the same variables over successive time intervals. Autocorrelation is diagnosed using Durbin-Watson test. It is the same calculating the correlation between two different time series except autocorrelation uses the same time series twice: once it's original form and the other is lagged one.

$$\rho\mathbf{0} = \frac{\boldsymbol{Cov(Xt, Xt-1)}}{\sqrt{\boldsymbol{Var(Xt).Var(Xt-1)}}}$$

But Var(Xt) = Var(Xt-1)

3.4.2. Correlation

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variables increases as the other variable decreases. Correlation is used to describe the linear relationship between two continuous variables. It measures the strength and direction of the linear relationship between two or more variables.

$$\rho\mathbf{xy} = \frac{\boldsymbol{Cov(x, y)}}{\sqrt{\boldsymbol{Var(x).Var(y)}}}$$

$$\rho\boldsymbol{xy} = \text{correlation}$$

Cov(x, y) =the covariance between variable X and Y

Var(x) = is variance of variable X

Var(y) =is variance of variable Y

3.4.3. Multicollinearity test

Multicollinearity (or collinearity) is a linear regression analysis when two or more independent or predictor variables are highly correlated with each other or intercorrelated. Presence of multicollinearity violates one of the core assumptions of multiple linear regression analysis as such it is problematic; the predicted regression coefficients are not reliable anymore.

Multicollinearity which describes the existence of high correlation between two or more predictor variables. The test for multicolinearity can be executed using the variance inflating factor (VIF) which indicates how the existence of multicollinearity inflates the variance of estimator (Gujarati, 2003). To test multicollinearity we use the variance inflation factor to identify which variables are affected by multicollinearity.

$$VIF = \frac{1}{(1-rj^2}$$

VIF = Variance inflation factor

r2 = is the correlation coefficient

If VIF > 10 is there is multicollilearity problem but VIF <10 there is no multicollinearity problem.

3.4.4. Heteroscedasticity Test

Heteroscedasticity the variability of one variable is not equal across the range of another variable that is predicted. In other word, heteroscedasticity refers to the data which has unequal variance across the predictor variable. It occurs when there is difference in the variance of the error terms for the range of observations. In the classical linear regression model, one of the basic assumptions is homoscedasticity assumption that states as the probability distribution of the disturbance term remains same for all observations. Heteroscedasticity is a systematic change in the spread of the residuals over the range of measured values. That is the variance of each error term is the same for all value of the explanatory variable. However, if the disturbance terms do

not have the same variance, this condition of non-constant variance or non-homogeneity of variance is known as heteroscedasticity. The preliminary analysis test for heteroschadasticity is required so as to deal with the problem of biased variance the estimated parameter. It will also help to address the problem of biased of standard errors. Two independent test were conducted these test are Breush-Pagan and white's test in which both of them rely on the residual of the fitted model. The Breush Pagan test is the diagnostics test which assumes that the error variance change with the set of variables. In this particular test the null hypothesis is the existence of equal error variance against the alternative hypothesis of the error variance being the multiplicative function of one or more variables (Gujarati 2003).

3.4.5. Normality Test

Normality test are used to determine if a data set is well modeled by a normal distribution and to compute how likely it is for random variable underlying the data set to be normally distributed. This test provides simple summaries about the sample and the measures. Measures of the central tendency and dispersion are used to describe the quantitative data. For the continuous data test of the normality is important for deciding the measure of central tendency and statistical methods for data analysis.

The study uses Bera Jaraque (BJ) normality test for non normality. From the result the study use Kurtosis and P-value to identify whether normality exist or not. The null hypothesis is the distribution is normal and the alternative hypothesis is that the distribution is not normally distributed. Therefore if the null hypothesis is rejected then the distribution is not normally distributed. Bera-Jarque formalizes this by testing the residual for normality and test whether the coefficient of the skewness and kurtosis are zero and three respectively.

CHAPTER FOUR

4. DATA ANALYSIS AND RESULTS

In the preceding chapter, the review of relevant literature helped this study to understand the problem and design an appropriate research approach to deal with the research objective. The previous chapter also discussed the research design employed to achieve the objective of the study and to test the research hypothesis. In this chapter the study analyzes the collected data using various statistical tools and presents the result and discussion accordingly.

4.1. Regional distribution of the manufacturing sector

The regional distribution of large and medium manufacturing industries by industrial group is shown in table 2. The total number of large and medium scale manufacturing industries as reported by CSA in 2016/2017 is 3,627 and has created job opportunities for 298,510 citizens. About 39.43% of the manufacturing industries are located in Addis Ababa the capital city of Ethiopia, 25.97% in oromia state, 13.48% in Amhara, 7.03% in Tigray regional government and the remaining 14.09% are found the remaining 7 regions of the country. These show that the distribution of the manufacturing industry is skewed to the capital city and its peripherals for better infrastructure and market access. The number of manufacturing firms by industrial classification also indicates that the sector is dominated by few type of enterprise. For instance as, can be seen from the table below 26.16% of the manufacturing industries fall in the category of food product and beverages followed by nonmetallic mineral products with more than 17.89% and furniture with 13.79. The appendix 1 gives detail data on the regional distribution by established number coverage percentage. The name of the industrial group is appendix 2 in the last page.

Table 2 Trend of percentage distribution of value added by the industrial group 2012/2013(2005 E.F.Y) – 2016/2017(2009 E.F.Y)

Summary Table

Industrial group	**2005**	**2006**	**2007**	**2008**	**2009**	**average**
1	32.73	37.91	49.21	42.22	30.06	38.43
2	1.45	1.14	1.50	2.35	2.29	1.75
3	1.57	0.33	2.43	2.28	2.23	1.77
4	(0.05)	1.61	0.64	3.50	9.67	3.07
5	8.84	7.53	3.99	1.92	3.80	5.22
6	0.24	0.09	0.45	0.64	0.33	0.35
7	3.38	3.56	2.39	1.87	7.68	3.78
8	11.30	9.01	5.41	6.38	4.43	7.31
9	5.86	7.72	1.56	7.34	5.99	5.69
10	17.24	18.73	12.94	13.34	14.68	15.39
11	2.33	2.10	3.97	5.46	4.48	3.67
12	7.50	6.18	7.37	5.73	2.90	5.94
13	0.18	0.74	(0.12)	2.70	0.56	0.81
14	5.49	1.42	8.45	2.63	2.59	4.12
15	1.94	1.93	(0.19)	1.63	8.32	2.73
Total	100	100	100	100	100	

Source: Compiled from CSA 2016/2017(2009 E.F.Y)

Table 3 the portrays the percentage distribution of the value added in the national account at market price by industrial group and it indicates that on average 38.43 % of the value added by

the manufacturing industries to the national account was contributed by food and beverages manufacturing industry, 15.39 % by the manufacturers of nonmetallic mineral producers , 5.94% by fabricated metal products except machinery and equipment manufacturing industry and the remaining 40.24% is produced by the other manufacturing industries.

Table 3 Per capita and ratio of major indicators of manufacturing industries (2013 -2017)

2012/2013(2005 E.F.Y) – 2016/2017(2009 E.F.Y)

Per capita/ratio	**2005**	**2006**	**2007**	**2008**	**2009**
Wage and salaries paid per employee	10,198	12,730	13,458	13,455	15,966
Growth rate	Base year	24.83	5.72	-0.0002	18.66
Gross value production per employee	149,173	174,399	193,722	227,742	359,229
Value added per wage	2.53	4.65	4.38	3.83	5.41
Growth rate	Base year	83.79	-5.8	-12.56	41.25
Operating surplus per employee	29,334	32,223	38,485	36,926	57,655
Value of fixed asset per employee	59,939	64,659	70,378	84,535	85,600

Source: compiled from CSA (2016/2017) data report

Table 4 depicts per capita indicators of the manufacturing industries. All the per capita indicators displayed in the table shows an increase trend over the past five years. That is wages and salaries paid per employee have increased and gross value of production per employee has also risen over the same period. However, the growth rate is declined. This is especially true when it is compared with the growth rate the value added per wage.

4.2. Result

This study covers all large and medium manufacturing sectors operating during the whole study period (2013-2017) in Ethiopia. In this study firm size, export intensity, labor productivity, import intensity, capacity utilization and Herfindahl index (HI) were considered as independent variables and value added per wage were considered as dependent variable. In order to achieve the study objective the researcher adopted various statistical tools to analyze the collected data. The first sections presents descriptive statistics which focused on the distribution of the data, mean, max, min and standard deviation, the second section discusses correlation analysis, post estimation test and the third section present the output from the model.

4.2.1. Descriptive data analysis

The statistical description of the table below shows the mean, maximum, minimum and standard deviation value and number of observations for the dependent variable value added per wage and independent variables labour productivity, firm size, export intensity, import intensity, capacity utilization and herfindihal index. Mean is the measure of central tendency used to describe the most typically value in a set of value. Standard deviation shows how far the distribution is from the mean, or the dispersion of the variables from their average. A small standard deviation implies that most of the sample means will be near the center population means thus the sample mean has a good chance of being close to the population mean and a good estimator of the population mean. On the other hand a large standard deviation illustrated that the given sample mean will be a poor estimator of the population mean.

Table 4 Descriptive statistics of study variables over the period of 2013-2017

xtsum VAD EX FS CU HH II lnlp

Variable		Mean	Std. Dev.	Min	Max	Observations
VAD	**overall**	.0365197	.0925103	.000411	2.173352	N = 28028
	between		.1119239	.000411	2.173352	n = 15256
	Within		.0368405	-.8892011	1.636745	T = 1.83718
EX	**overall**	.1047556	.3607131	0	15.02863	N = 28028
	between		.4258727	0	13.01696	n = 15256
	Within		.1565851	-3.722415	11.34212	T = 1.83718
FS	**overall**	1.302193	.0286123	1.237556	1.412483	N = 28028
	between		.0254614	1.237556	1.412483	n = 15256
	Within		.019111	1.222294	1.411512	T= 1.83718
CU	**overall**	.1517279	.2856935	-4.543498	1.49195	N = 28028
	between		.2497617	-4.543498	1.49195	n = 15256
	Within		.1941953	-2.801805	1.842341	T = 1.83718
HH	**overall**	565.1102	11385.42	0	893326.6	N = 28028
	between		11886.77	0	623815	n = 15256
	Within		6546.915	-178100.2	715226.3	T = 1.8371
II	**overall**	.2020908	1.677588	0	212.5578	N = 28028
	between		2.243341	0	212.5578	n = 15256
	Within		.2373563	-15.52032	31.50726	T= 1.8371
lnlp	**overall**	2.308184	3.143714	.1054108	9.832904	N = 28028
	Between		2.748531	.1054108	9.832797	n = 15256
	Within		2.126597	-4.572714	9.940327	T = 1.83718

Source: Central statistical agency data (2013-2017 G.C) through STATA 14

Table 5 shows the descriptive statistics of each variable computed based on 28,028 observations recorded. It can be noticed value added per wage fluctuates between 0.00041 and 2.17; average of value added per wage is 0.036 and deviates from between group with about 0.11 and within group about 0.037 which implies the presence of variation in the value added per wage across the large and medium manufacturing firms. The implication of this descriptive result is there is the

noticeable increment value added per wage from period to period. As depicted in the descriptive statistics table the independent variable Herfindahl index (HI) of large and medium manufacturing firms which measured the overall market concentration range from a minimum 0 to a maximum of 893,326.60 and the average of Herfindahl index (HI) of large and medium manufacturing firms is 565.11 with highest deviation from other explanatory variables of 11,385.42.The result implies that low market concentration in the large and medium manufacturing firms.

4.2.3. **Post Estimation Test**

The study performed the test of regression assumption. The objective of the model is to predict the strength and the direction of association among the dependent and independent variables. Thus in order to maintain the validity and robustness of the regression result of the research in the regression model, it is better to satisfy basic assumption panel regression model. As noted by brooks (2008) when these assumptions are satisfied, it is considered as all available information is used in the model. However, if these assumptions are violated, there will be data that left out of the model. Accordingly, before applying the model for testing the significance of the slopes and analyzing the regressed result, the error equal zero mean test, heteroscedasticity, autocorrelation, normality test and multicolinearity tests are made for identifying misspecification of the data if any so as to fulfill the research quality.

4.2.3.1. **Correlation analysis**

Correlation is the way to index the degree to which two or more variables are associated with correlated to each other. The correlation coefficient between two variables range from +1 (i. e. perfect positive relationship) to -1(i.e. perfect negative relationship). This assumption that the errors are linearly independently of one another (uncorrelated with one another). According to Brooks (2008) when the error terms for any observation is related to the error term of other observation, it indicates autocorrelation problem in the model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient .in this study to test the existence of autocorrelation, the popular Breusch-Godfrey serial correlation LM Test was employed. According to Brooks (2008), if it is stated that y and x are correlated, it means that y and x are being treated in completely symmetrical way. Thus, it is not implied that changes in x cause change in y, or indeed that changes in y cause changes in x

rather, it is simply stated that there is evidence for linear relationship between the two variables and that movements in the two are on average related to an extent given by the correlation coefficient.

Table 5 Correlation matrix of dependent and independent variable

corr VAD EX FS CU HH II lnlp

(obs = 28,028)

	VAD	EX	FS	CU	HH	II	lnlp
VAD	1.0000						
EX	0.8631	1.0000					
FS	0.0357	0.0644	1.0000				
CU	-0.0924	-0.2360	0.1009	1.0000			
HH	0.6354	0.5300	-0.0093	-0.0926	1.0000		
II	0.1753	0.1529	0.0033	-0.0238	0.0495	1.0000	
Lnlp	0.0240	-0.0544	0.0313	0.2625	-0.0008	0.0103	1.0000

Source: Central statistical agency data (2013-2017 G.C) own computation through STATA 14

As depicted in the table 6 Above Herfindahl index (HI), Firm size, export intensity, log value of labour productivity and import intensity had statistically significant and a positive relationship with the value added per wage with correlation coefficient 0.6354, 0.0357, 0.8631, 0.024 and 0.1753 respectively. Similarly capacity utilization had statistically significant but negative linear relationship with value added per wage with the correlation coefficient -0.0924. Export intensity show a higher positive correlation coefficient to the value added per wage with the correlation coefficient 0.8631.This result also in line to the expectation sign. Capacity utilization show negative correlation coefficient to the value added per wage with the correlation coefficient -0.0924. This result is not in line to the expectation sign.

The test for autocorrelation was made by using Durbin – Watson (DW) is the test for the first order autocorrelation i.e. it tests only for a relationship between an error and it's immediately previous value. The null hypothesis for the DW test is no autocorrelation between the error and its lag. The Durbin – Watson statistics (D-W test) on the Stata 14 result shows that Durbin-

Watson d-statistic (7, 28,028) = 1.990711. It shows there is no evidence for the presence of autocorrelation.

4.2.3.2. **Multicollinearity Test**

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another according to brooks (2008). If multicollinearity occurs, the regression model is unable to tell which independent variables are influencing the dependent variable. To test the presence of multicollinearity the study used correlation matrix.

We can test multicollinearity by using variance inflation factor (VIF). The test for multicollearity can be executed which indicates how the existence of multicollinearity inflates the variance of an estimator (Gujarati, 2003). Thus he claimed that that those explanatory variables with VIF more than 10 or tolerance closer to zero have a good indication for the prevalence of collinearity.

Table 6 Result of variance inflation factor and Tolerance

estat vif

Variable	VIF	1/VIF
EX	1.51	0.660930
HH	1.40	0.714214
CU	1.15	0.868851
Lnlp	1.08	0.930228
II	1.03	0.974645
FS	1.02	0.978293
Mean VIF	1.20	

Source: Central statistical agency data (2013-2017 G.C) own computation through STATA 14

From the above table 7 we can understand that the highest VIF registered in the regression analysis is 1.51 or tolerance of 0.98. Thus, the result can give an indication for the non-existence of multicollinearity.

4.2.3.3. **Test for heteroschadasticity**

In the classical linear regression model, one of the basic assumptions is homoscedasticity assumption that states as the probability distribution of the disturbance term remains same for all observations. That is the variance of each ui is the same for all value of the explanatory variable. However, if the disturbance terms do not have the same variance, this condition of non-constant variance or non-homogeneity of variance is known as heteroscedasticity. The preliminary analysis test for heteroschadasticity is required so as to deal with the problem of biased variance the estimated parameter. It will also help to address the problem of biased of standard errors. Two independent test were conducted these test are Breush-Pagan and white's test in which both of them rely on the residual of the fitted model. The Breush Pagan test is the diagnostics test which assumes that the error variance change with the set of variables. In this particular test the null hypothesis is the existence of equal error variance against the alternative hypothesis of the error variance being the multiplicative function of one or more variables (Gujarati, 2003).

Breusch-pagan test of heteroscedasticity

H_0: constant variance (homoscedasticity)

H_1: unrestricted heteroskedasticity

Table 7 Result of heteroscedasticity test using Breusch-Pagan test

estat hottest

reg e2 EX FS CU HH II lnlp

Source	**SS**	**df**	**MS**		**Number of obs = 28,028**	
Model	4.32398334	6	.72066389		**F(6, 28021) = 1391.18**	
Residual	14.5155396	28,021	.000518024		**Prob > F = 0.5312**	
Total	18.839523	28,027	.000672192		**R-squared = 0.2295**	
					Adj R-squared = 0.2294	
					Root MSE = .02276	
e2	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
EX	.0238969	.0004636	51.55	0.000	.0229882	.0248056
FS	-.0072942	.004804	-1.52	0.129	-.0167102	.0021218
CU	-.0000555	.0005105	-0.11	0.913	-.0010562	.0009451
HH	4.93e-07	1.41e-08	34.91	0.000	4.65e-07	5.21e-07
II	-.0009322	.0000821	-11.36	0.000	-.0010931	-.0007713
Lnlp	.000112	.0000448	2.50	0.013	.0000241	.0001998
cons	.0083267	.0062442	1.33	0.182	-.0039123	.0205657

Source: Central statistical agency data (2013-2017 G.C) own computation through STATA 14

As shown the table 8 Breusch-Pagan test the result demonstrates with a p-value of 0.5312 for value added per wage. Hence the null hypothesis accepted in favor of the alternative hypothesis. In other word the test justifies there is no existence of heteroscedasticity.

4.2.3.3. Test of Normality

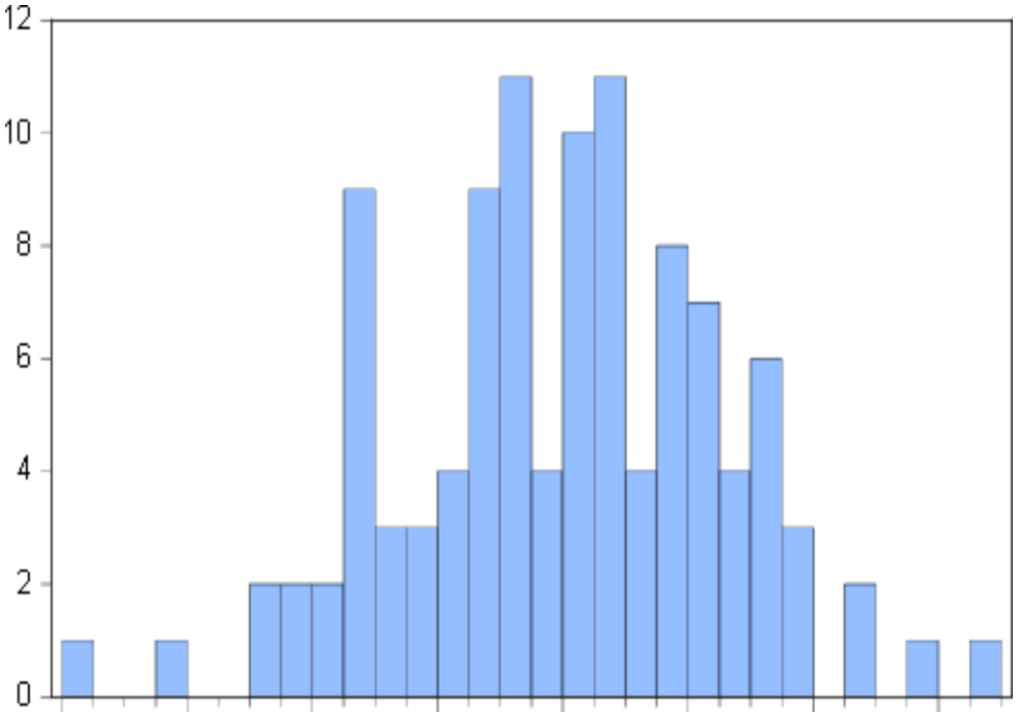
This study also relies on the Jarque-Bera test where the null hypothesis normality is tested against the alternative hypothesis of non-normal distribution. A normal distribution is not skewed and is defined to have kurtosis coefficient of 3. Bera-jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively, skewness refers to how symmetric the residuals are around zero. Perfectly symmetric residuals will have a skewness of zero. Skewness measures the extent to which a distribution is not symmetric about its mean value. Kurtosis refers to the peakedness of the distribution. For a normal distribution the kurtosis value is three. Kurtosis measures how far the tail of the distribution are, the Jarque-Berta test for normality is based on two measures, skewness and kurtosis. For normal distribution the JB statistics is expected to be statistically indifferent zero. The Bera-Jarque probability statistics/ p-value are also expected not to be significant 5% significant level. If the residuals are normally distributed, the histogram should be bell-shaped and BJ statistic would not be significant. The p-value of the normality test should be bigger than 0.05 to not reject the null of normality to not reject the null of normality at 5% level.

The hypothesis of normality distribution is:

H_0: residual follows a normal distribution

H_1: residuals do not follow a normal distribution

Figure 2 Normality Test Result



Jarque-Bera normality test: chi2= 120.6, Prob>ch2= 0.13, Skewness = 0.0934 and

Kurtosis =2.937

Jarque-Bera test for H0: normality

From the above output we can conclude that the data is normally distributed that is the coefficient of kurtosis was close to three, skewness also close to zero and the Jarque –Bera statistics has a p-value of 0.13 implying that the data were consistent with a normal distribution assumption. Based on the statistical result the studies fail to reject the null hypothesis of normality at 5% significance level.

4.2.4. **Random effect versus fixed effect models**

Econometrics model used to examine the explanatory variable such as labor productivity, firm size, export intensity, import intensity; capacity utilization and Herfindahl index (HI) on the value added per wage of large and medium manufacturing firm was panel data regression which should be either fixed effect or random effect model. To decide fixed or random effects we can run Hausman test where the null hypothesis is that the preferred model is random effect versus the alternative hypothesis is fixed effect. The study used Hausman specification test to identify whether fixed effect or random effect model is appropriate for the study.

Table 8: Result of model selection by Hausman test.

Hausman fixed random

---- Coefficients ----

	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B))**
	Fixed	random	Difference	S.E.
EX	.1476398	.186065	-.0384252	.0010696
FS	-.060323	-.077502	.017179	.0051677
CU	.0325912	.0334314	-.0008402	.000525
HH	1.93e-06	1.93e-06	-2.87e-09	1.86e-08
II	.010731	.0030357	.0076953	.0007742
lnlp	.0008299	.0010741	-.0002442	.0000467

Source: Central statistical agency data (2013-2017 G.C) own computation through STATA 14

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 (5) = (b-B)'[(V_b-V_B) ^ (-1)](b-B) = 1352.01

Prob>chi2 = 0.0000

As shown in the above table, probability chi-square (0.0000) less than level of significance (α - value = 0.05). Based on the above result Hausman specification test for this study indicate fixed effect model is more preferable than random effect model.

4.2.5. **Result of regression analysis**

In the large and medium manufacturing firm performance model regression out put the beta coefficient may be positive or negative, beta indicates that each variables level of influence on the dependent variables. P-value indicates at what percentage or precession level of each variable is significant. R-square variable indicate the explanatory power of the model and in this study adjusted R- square value which takes in to account the loss of degree of freedom associated with added extra variable were inferred to see the explanatory powers of the models.

In the prior chapter are tested and the result are estimated through panel least square is presented. In large and medium manufacturing firms performance behavior model the researcher specified panel fixed effect model by which value added per wage are regressed by various firm industries, regulatory and macro factor. The operational panel regression model used to examine the significant factors that affect the performance of large and medium manufacturing firm in Ethiopia which represented by value added per wage.

Table 9 Fixed effect or within estimator

xtreg VAD EX FS CU HH II lnlp, fe

Fixed-effects (within) regression		Number of obs	= 28,028
Group variable: ESID		Number of groups	= 15,256
R-sq: Within	= 0.6961	Obs per group: min	= 1
Between	= 0.7950	avg	= 1.8
Overall	= 0.7718	max	= 5
		F (6, 12766)	= 4873.31
corr(u_i, Xb)	= 0.2572	Prob > F	= 0.0000

VAD	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
EX	**.1476398**	**.001366**	**108.08**	**0.000**	**.1449622**	**.1503174**
FS	-.060323	.0095543	-6.31	0.000	-.0790508	-.0415952
CU	.0325912	.0009967	32.70	0.000	.0306375	.0345449
HH	1.93e-06	3.05e-08	63.26	0.000	1.87e-06	1.99e-06
II	.010731	.0007921	13.55	0.000	.0091783	.0122837
lnlp	.0008299	.0000881	9.42	0.000	.0006573	.0010026
cons	.0894856	.012413	7.21	0.000	.0651543	.113817
sigma_u	**.0531551**					
sigma_e	**.03009257**					
rho	**.75728862**	**(fraction of variance due to u_i)**				

F test that all u_i=0: F (15255, 12766) = 2.56 Prob > F = 0.0000

Source: Central statistical agency data (2013-2017 G.C) own computation through STATA 14

The determinants performance manufacturing firm is analyzed using fixed effects regression model taking used value added per wage as dependent variable and firm size, labor productivity, capacity utilization, import intensity, export intensity and Herfindahl index (HI) as explanatory variables. As result of the fixed effects regression model the performance of manufacturing firm can be explained by

Y = 0.89+ 0.0000019HI- 0.06FS + 0.00083 lnlp + 0.033CU + 0.15EX + 0.011II +Eit

From the above table result shown Herfindahl index (HI), export intensity, import intensity, capacity utilization and labour productivity p-value of 0.000 was found to be statistically

significant at 5% level significance and positively associated with the value added per wage but firm size p-value of 0.000 was found to be statistically significant at 5% level of significance and negatively associated with value added per wage. We can understand that the R^2value for within, between and overall is 69.61%, 79.60% and 77.18% respectively. As $R^2$for the between effect is highest, it tells that the time effect is more important than individual effect. We can say that the long run effect is more important than short run effect. Controlling the effect of heterogeneity and autocorrelation, the rho shows that 75.73% of variance is due to the difference across panels, heterogeneity effect and also rho shows interclass correlation.

Discussion on regression results

The previously section highlighted the regression analysis results of the study and this section discusses the general result of each explanatory variables based on fixed effect regression results indicated in the above table. In addition the discussion analyzed the statistical finding of the study in relation to the previous empirical evidences. Hence the following discussions present the relationship between explanatory variables and value added per wage.

The corr(u_i, Xb) = 0.2572 shows that the positive correlation between error terms and explanatory variables and this ensures the assumption of fixed effect in this regard. All explanatory variables are jointly statistically significant at 5 percent level of significance and adequate enough to explain the change in value added per wage.

Export intensity of the manufacturing firms

As indicated the fixed effect model table above the coefficient of the export intensity is positively and the study found out a positive and statistically significant relationship between the export intensity and value added per wage of the manufacturing firm as measured at 5% level of significant and the result was in accordance the expected sign. This implies that every 1 unit change (increase or decrease) export intensity keeping other thing constant had a resultant change of 0.15 units on the value added per wage in the same direction. Therefore the null hypothesis which states that export intensity has positive and significant effect on the performance of large and medium manufacturing firm in Ethiopia failed to reject. This suggests that export intensity increase with relatively the value added per wage also increase. The result also dictates that the productivities of the manufacturing firm use export intensity choice of f inancing. This finding of the study is consistent to heterogeneous theory of firm which argues that the inclusion of export intensity as independent variable has a positive effect on the

productivities/performance of the manufacturing firms. This finding was consistent with the finding of (Jienwatcharamongkhol, 2014), (Hobdari, 2010), Bernard and Jensen (1995) and Bernard and Jensen (1999).

Import intensity of the manufacturing firm

Regression result suggest that import intensity statistically significant positively association with the performance of the manufacturing firm with p-value 0.000 at 5% significance level. This implies that every one unit change (increase or decrease) in the manufacturing firm import intensity keeping other thing constant had a resultant change of 0.011 units on the value added per wage in the same direction. Therefore the null hypothesis which state that import intensity has a positive and significance effect on the performance of the manufacturing firm in Ethiopia failed to reject. This finding was consistent with the finding of (Jienwatcharamongkhol, 2014), (Hobdari, 2010), Bernard and Jensen (1995) and Bernard and Jensen (1999).

Capacity utilization of the manufacturing firms

Regression result suggest that capacity utilization statistically significant positively association with the performance of the manufacturing firm with the p-value 0.000 at 5 percent of level of significance. This implies that every one unit change (increase or decrease) in the manufacturing firm capacity utilization keeping other thing constant had a resultant change of 0.033 units on the value added per wage in the same direction. Therefore the null hypothesis which states that capacity utilization has a positive and significance effect on the performance of the manufacturing firm in Ethiopia failed to reject. In consistence with the finding of (Idris and Rahmah (2009) and (Kirkley et al. 2002).

Labour productivity of the manufacturing firms

The coefficient of the labour productivity had a positive effect and it is statistically significant at 5% level of significance. This means that there is positive and statistically significance relationship between values added per wage and labour productivity. This indicate that holding other independent variable constant, a unit increase in log value of labour productivity will result to 0.00083 increase in the value added per wage (performance). This positive relationship between log value of labour productivity and value added per wage is also supported by Miller and Upadhyay (2000) and Boothby *et al*. (2010). As a result the null hypothesis which state that labour productivity has a positive and significance effect on the performance manufacturing firms in Ethiopia fail to reject. The increase log value of labour productivity has positive effect

on the performance (value added per wage) of the manufacturing firm to the extent that log value of labour productivity is used to increase investment in firm expansion which will consequently result in a boost to firm performance.

In consistence with this finding (Huselid *et al*, 1997), Miller and Upadhyay (2000) and Boothby *et al*. (2010) shows a significance positive relationship between labour productivity and value added per wage performance of the manufacturing firm.

Firm size of the manufacturing

The firm size which measures log of total asset had a negatively and significantly affects the value added per wage (performance) at 5% significant level in agreement with the prior expectation. These indicate, holding other independent variables constant, a one percent increase in size will result to 0.06 decreases on the performance of the manufacturing firms. Hence the null hypothesis which state firm size has negatively and significance effect on the performance of the manufacturing firm in Ethiopia failed to reject. The significance of firm size on firm's performance indicates that the bigger size firms have less performance of the manufacturing firms.

This finding of the study is consistent to firm size theory of firm which argues that the inclusion of firm size as independent variable has a negative effect on the productivities/performance of the manufacturing firms. This finding was consistent with the finding of Amato and Burson (2007) and Lee (2009).

Herfindahl index (HI) of the manufacturing firm

The coefficient of the Herfindahl index (HI) had a positive effect and it is statistically significant at 5% level of significance. This means that there is positive and statistically significance relationship between values added per wage and Herfindahl index (HI). This indicate that holding other independent variable constant, a unit increase in Herfindahl index (HI) will result to 0.0000019 increase in the value added per wage (performance). This positive relationship between Herfindahl index (HI) and value added per wage (performance) is also supported by (Molyneux and Forbes, 1995). As a result the null hypothesis which state that Herfindahl index (HI) has a positive and significance effect on the performance manufacturing firms in Ethiopia fail to reject. The increase Herfindahl index (HI) has positive effect on the performance (value added per wage) of the manufacturing firm to the extent that Herfindahl index (HI) is used to

increase investment in firm expansion which will consequently result in a boost to firm performance.

In consistence with this finding (Molyneux and Forbes, 1995) shows a significance positive relationship between Herfindahl index (HI) and value added per wage (performance) of the manufacturing firm.

CHAPTER FIIVE

5. CONCLUSIONS AND RECOMMENDATION

5.1. CONCLUSION

The objective of this study is to examining the factor that affect the performance of large and medium manufacturing firms in Ethiopia. The study was used five years panel data to analysis the factor affecting performance in the manufacturing firms in Ethiopia which had five years of manufacturing firms over the period 2013-2017. Labour productivity, export intensity, import intensity, Herfindahl index (HI), firm size and capacity utilization were used as independent variables. The value added per wage was used as dependent variable. Panel data was presented and analyzed by using the descriptive statistics, correlation analysis and fixed effect regression analysis through STATA 14 statistical software to examine the factor affecting performance in the manufacturing firms' in Ethiopia which measured by the value added per wage. While before performing the diagnostic test were conducted including multicollinearity, heteroskedastic, auto correlation test and normality test.

The study runs the overall regression analysis to determine the level of significance of the effect the independent variables on the dependent variable. The independent variables which are specified in the study were labour productivity, Herfindahl index, export intensity, import intensity, firm size and capacity utilization whereas the dependent variable performance which was measured by value added per wage.

As the regression result shows, export intensity, import intensity, firm size, capacity utilization, labour productivity and Herfindahl index (HI) were significant in examining the performance of the manufacturing firms in Ethiopia .Those implies that these variables are very important factors considering by the manufacturing firm in the decision to improve the performance. Among other factors Herfindahl index (HI), export intensity, import intensity, labour productivity and Capacity utilization had strong, positive and statistical significant, hence high Herfindahl index (market concentration) has increased the performance of the manufacturing firm. Firm size had a negative and statistically is significant effect on the performance of the manufacturing firms.

5.2. **Recommendation**

- Good performance is the basis for the manufacturing firm profitability. Therefore its administration requires considerable skill and dexterity on the part of the firm's management. So that good performance must be handled effectively for the firms to remain attractive and retain their customers. Hence the Ethiopia manufacturing firms owners should strive hard to manage their company to effectively achieve their profitability objective and the multiplier effects maintained to the maximum.
- And also the manufacturing firm owners adjusts their work environment in response to signal from these factors such that positive signal make firms become more favorably disposed to effective (good) performance.
- Similarly, Ethiopian large and medium manufacturing firm need to work more towards improving their market concentration (Herfindahl index), capacity utilization, export intensity, import intensity and labour productivity, those variables were very strong and statistically significant factor of performance. Hence strength the market concentration and export intensity encourages their production ability and improves performance at the same time by increasing the remaining capacity utilization.
- Based on the finding of the study, among firms of specific factors of performance export intensity, labour productivity, capacity utilization and import intensity were statistically significant and positively relation with the value added per wage. The Ethiopia manufacturing firms shall give priority to develop profitability, performance, policies and capabilities and these efforts should be improve the profitability, monitoring and problem management to the manufacturing firms'.
- Finally on the positive and significant relationship established between market concentration (Herfindahl index), export intensity, labour productivity, capacity utilization and import intensity of the study recommends that to all manufacturing firm to improve the performance.

5.2.1. For future researchers

This study paper had put some ground work to explore the factor affecting the performance large and medium manufacturing firms in Ethiopia by using market concentration (Herfindahl index), export intensity, import intensity, capacity utilization, firm size and labour productivity to measure the performance of large and medium manufacturing firm. This study focuses only on the performance of the manufacturing firms by measuring using value added per wage.

In this researching area, the future researcher shall conduct research on the same issue by including other variables which was not including under this study.

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APPENDIXES

Appendix - 1 Distribution of large and medium manufacturing industries by regional states and industrial group

2016/2017(2009 years) see the annex the name of the industrial group

	Regional States												**%**
Industrial group	***Tigray***	**Afar**	**Amhara**	**Oromia**	**Somalia**	**Benshangul**	**SNNP**	**Gambela**	**Harar**	**Addis Ababa**	**Diredawa**	**Total**	
1	63	4	151	303	20	---	97	---	6	259	46	949	26.16
2	---	---	---	---	1	---	---	---	---	---	---	1	0.03
3	4	2	14	16	---	---	1	1	---	251	1	290	8.00
4	---	---	6	26	---	---	2	---	---	64	4	102	2.81
5	7	---	7	22	---	---	---	---	1	122	---	159	4.38
6	---	---	5	19	---	---	13	---	1	36	2	76	2.10
7	4	---	3	28	---	---	5	---	3	81	13	137	3.78
8	8	---	4	63	---	---	1	---	1	70	1	148	4.08
9	2	---	10	104	1	---	3	---	2	127	12	261	7.20
10	99	9	119	179	---	---	76	---	8	132	27	649	17.89
11	18	---	1	12	---	---	---	---	---	47	3	81	2.23
12	24	1	30	42	1	---	13	---	6	98	8	223	6.15
13	2	---	1	11	---	---	2	---	---	21	---	37	1.02
14	3	---	---	5	---	---	---	---	---	6	---	14	0.39
15	21	---	138	112	3	8	84	---	8	116	10	500	13.79
Total	255	16	489	942	26	8	297	1	0.99	1,430	127	3,627	100
%	7.03	0.44	13.48	25.97	0.72	0.22	8.19	0.03	0.56	39.43	2.95	100	

Source: compiled from CSA (2016/2017) years data report

Appendix – 2: Industry category name and codes used to represent the 15 manufacturing classes

Industry code	Industry category name (as per to CSA)
1	manufacturing of food product and beverage
2	manufacturing of tobacco products
3	manufacturing of textiles
4	manufacturing of wearing apparel, except fur apparels
5	footwear, luggage and hand bags
6	manufacturing of wood and products of wood and cork except furniture
7	manufacturing of paper, paper products and printing
8	manufacturing of chemicals and chemical products
9	manufacturing of rubber and plastic products
10	manufacturing of other non metallic mineral products
11	manufacturing of basic iron and steel
12	manufacturing of fabricated metal products except machinery and equipment
13	manufacturing of machinery and equipment n.e.c
14	manufacturing of motor vehicle, trailer and semi trailer
15	manufacturing of furniture