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EDITORIAL COMMITTEE

St. Mary's University (SMU) is one of the leading private higher education institutions spearheading the dissemination of knowledge in the country. Over the past ten years, **SMU** has achieved remarkable progresses as well as successes in the transmission of knowledge.

Journal of Business and Administrative Studies (JBAS) is a peer-reviewed bi-annual journal published by St. Mary's University and dedicated to the promotion and production of knowledge through the scientific methods of

enquiry to achieve independent analysis as well as collection, processing and interpretation of data.

Cognizant of the complementary functions of transmission of knowledge (through teaching) and the conduct of scholarly inquiry (through research), SMU has aggressively been promoting publications of journals and conducting conferences for well over a decade. On one hand, while SMU recognizes that its faculty staff, academics and practitioners in the country possess a wealth of untapped scholarly and research potential. On the other hand, we believe that this immense potential has not been realized due partly to lack of resources and partly to the absence of a reliable outlet (i.e. journals). This concern has prompted the academic leadership at SMU to launch JBAS.

JBAS shall hopefully fill the vacuum created by the absence of outlets in the realm of business, economics and administrative studies in the country. The purpose of this Journal is to provide practitioners and scholars with a forum through which they would get opportunities to publish their research based debate as well as discourse in the fields intimated. Equally important, it shall offer insight into developments in the fields bringing Ethiopian realities under purview.

Contributors shall thus come from a broad range of fields and disciplines seeking to reflect on the theoretical and practical developments in the areas of accounting and finance, economics, management, marketing, public management as well as governance and related fields.

Determinants of Throughput Performance of Modjo Dry Port, Ethiopia

Rediet Bekele*
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ABSTRACT

Efficient and effective dry ports are crucial for the economic growth of a landlocked nation like Ethiopia. This study presents the assessment of the performance and the determinants factors for effective and efficient dry port performance by taking the case of Modjo dry port. Primary data were collected from 130 sample customers and 41 sample employees of the dry port, which were selected based on convenience sampling technique. The data were collected using questionnaire and were analyzed using descriptive statistics and ordinal logistics model. STATA software was used to estimate the logistic regression model. The performance of the dry port estimated using pre-defined performance indicators identified for the latent performance dimension, such as human capital, information capital, and size of the dry port, port machinery, infrastructure and reliability. Accordingly, the overall findings showed that the throughput performance of Modjo dry port was found at medium level with inter-month and annual fluctuations. The result of the study further indicated that except human capital and size of the port, information capital, service cost, port machinery, port infrastructure and reliability were functioning at medium level of performance. Human capital was found at low level of performance, whereas the size of the port was functioning at higher level of performance. Apart from this, the regression analysis of the study suggests that except infrastructure and machinery, information capital, human capital, service cost, size of the port and reliability found positive and significant determinants for the performance of the dry port at different levels of intensity and probability levels. The findings study implied that there is a possibility of improving the performance of Modjo dry port through capacitating human resources, ICT infrastructure, the size of the port and reconsidering the service cost and its reliability. Therefore, the study recommends the strategic leadership on the interventions of improving the performance of Modjo dry port.

Keywords: Throughput performance, determinants, Modjo dry port, Ethiopia

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1. INTRODUCTION

1.1. Background of the Study

Land lockedness refers to the geographical situation of a country without direct access to the sea (Arvis et al. 2014). According to this definition, there are 44 landlocked countries in the world and of these, the United Nations lists 32 as landlocked developing countries (LLDCs) that are low and middle-income countries based on the World Bank country classification with a population of nearly 440 million. Due to the lack of direct access to the sea Landlocked Developing Countries (LLDCs) are marginalized from major transportation and services (logistics, information technology) networks (World Bank-United Nations, 2014). Their international trade depends on transit through other countries. In addition, long distance to world markets, cumbersome transit procedures and inadequate infrastructure contribute to high transport and trade costs thereby reducing external trade and subsequent economic growth. Access to major markets is one of the biggest constraints to poverty reduction and economic integration of landlocked developing countries (Faye et.al. 2004). Companies in landlocked developing countries are struggling to get the goods to their destination without major delays and increases in cost (Faye et.al. 2004).

Efficient dry ports could help reduce these transport costs and make them better able to compete commercially (Gujar, 2011). To maintain the commendable economic growth that has been registered in the country over the last several years, one of the strategic measures taken by the Federal Government of Ethiopia is merging the former three public enterprises that have until recently been operating separately in a rather similar and interdependent maritime sub-

sector; namely, Ethiopian Shipping Lines S.C, Maritime and Transit Services Enterprise and Dry Port Enterprise.

The Ethiopian Shipping and Logistics Services Enterprise (ESL for short) is the result of this merger. This newly amalgamated enterprise came into being following the issuance of Regulation by the Council of Ministers (Regulation No. 255/2011), and is vested with the huge responsibility of rendering sea-transport & logistics services to the country's importers, exporters, and investors in a more effective and efficient way, by reducing transit time, cost and handoffs. Besides, a truck operating company named Comet Transport SC has recently been transferred to ESL following a government decree issued in the mid of 2014.Ethiopia, as landlocked developing country, faces a number of challenges. High transit transportation costs, limitation of technical and technological capacity, imported inflation, limited investable resources and low mobilization of domestic financial resources to finance the massive investment requirement for rapid growth. In order to ease some of the problems in the transit countries, Ethiopia has started constructing dry ports in its hinterland along the transit corridors. This will help the country to save foreign currency by mitigating demurrage charge that is paid at Djibouti port. ESLSE also offers on carriage possibilities to inland dry ports such as Modjo/Adama, Semera, Kombolcha, Dire Dawa, Mekele, Gelan and Comet (Addis Ababa).Among the dry ports, Modjo Dry port which is located approximately 70 kilometers southeast of Addis Ababa started its commercial operation in 2009 under the former Ethiopian Dry port Enterprise.

The dry port location has an access to the Express road and Djibouti Sebeta Rail way. The dry port is only involved with the operation of imported container and Ro/Ro activities that are transported through the intermodal system. Modjo dry port is the corridor for major trade transaction of the country since most of the

containers are destined to the capital. About 75% of the countries imported containers transported through intermodal system are handled by this port (ESLSE, 2015). Currently, 2014/2015, Mojo has financial growth of 555,145,650 ETB (26,435,507 USD) (Mojo dry port and terminal report, 2015).Dry ports could be a solution to this problem as it facilitates the international trade of the country with the rest of the world (IMF, 2013). With a dry port, goods being transported to a landlocked country, rather than undergoing customs procedures at the sea port, would instead be transported directly to the country's dry port, where customs clearance would take place (Gujar, 2011).

Poor trade logistics penalize importing and exporting firms and it can add about 10% to production cost. In addition to shipping cost, cost of transit of goods from port to the main land is still another burden for the trade competitiveness of the nation. Thus, given the important role of dry ports to the entire economy of the country it is worthy to examine factors that influence the performance of dry ports. Users are in the best position to determine if the port, and its partners, delivers the services required. If the delivery of services does not match expectations, the port does not deliver a value proposition to its customers, and is therefore seen as ineffective. According to Brooks and Pallis (2011) port users are able to see how ports perform on the various dimensions of port performance and are also able to identify factors which have impact on port performance. Hence, addressing user's perception on performance determinants is important and the findings could assist ports in benchmarking their performance against others they see as competitors, and therefore guide them in improving the quality of their services, which will be a significant benefit to the port users in particular and to overall economy in general. Kasypi and Muhammad (2006) noted that, the port performance is the lifeblood of ports

which deserves maximum attention from port operators. Therefore, the study of factors which drive the performance of dry ports is important when considering building a new port or upgrading an existing one and for achieving higher levels of competitiveness.

Performance measurement plays a vital role in all organizations. The function of performance measurement is to investigate how well the given activities of an organization have effectively and efficiently achieved their goals (Mentzer and Konrad, 1991) and to give guidance on how the organization can make improvements (Woo *et al*., 2011a). Port throughput measures reflect the amount of cargo or number of vessels the port handles over time. These measures are affected by many variables beyond physical capacity. For example, international and domestic demand for cargo handled by the port, competition with other ports, contractual arrangements with carriers, and changes in distant facilities. The throughput statistics included in this report are (1) cargo tonnage, (2) container TEU, and (3) vessel calls categorized by commodities carried. It is important to note that the throughput statistics presented in this report are annual totals, which can mask seasonal variations in cargo flows that place recurring stress on available port capacity. The Working Group recommended that BTS focus on annual totals and not on quarterly or monthly totals. BTS will explore methods for capturing the effects of seasonal variations on port throughput and capacity in future editions of this report (BTS, 2017).

High transit transportation costs, limitation of technical and technological capacity, imported inflation, limited investable resources and low mobilization of domestic financial resources to finance the massive investment requirement for rapid growth. Traditionally, cost accounting (or financial) principles were the main tool to measure and evaluate organizations' performance. The

problems with regard to the traditional approach have been widely documented with criticism especially for encouraging short-term decision making (Banks and Wheelwright, 1979; Hayes and Garvin, 1982; Kaplan, 1984). On top of that, using only financial measures in performance measurement is no longer sufficient to cover all related issues for the new business environment; presenting this approach is highly outdated and inadequate (Kaplan, 1984; Miller and Vollmann, 1985; Fry and Cox, 1989). As a consequence, the importance of non-financial (i.e. intangible assets) measures and the integral applications of both financial and non-financial measures for performance measurement have been continuously acclaimed (Johnson and Kaplan, 1987; Daniel and Keegan, 1989; Neely *et al*., 1995).

The study of performance measurement in ports and terminals has been attracting scholars and industrial practitioners in the past three decades. The study of port and terminal performance can be seen as a well-established segment in the port-related academic literature in terms of the number of publications (see Pallis*et al*. (2011) and Woo *et al*. (2012)). While over time they have developed in a broader and more advanced way, there are still research gaps yet to be filled.

The studies on port performance measurement traditionally focus on the efficiency and productivity of port/terminal operations (Suykens, 1983; Kim and Sachish, 1986; De Monie, 1987; Talley, 1988;Chadwin*et al.*, 1990; Roll and Hayuth, 1993; Talley, 1994;Tongzon and Ganesalingam, 1994;Tongzon, 1995a;Tongzon, 1995b;Sachish, 1996;Tongzon, 2001;Cullinane*et al*., 2002; Barros and Athanassiou, 2004;Cullinane*et al.*, 2004; Wang and Cullinane, 2006; Cruz *et al.*, 2013). In such studies, various research scopes and approaches are used for productivity comparisons or engineering and economic optimums for benchmarking purpose.

UNCTAD (1976) suggested productivity and effectiveness indicators have been used by many researchers as a means of measuring port performance. Furthermore, the suggested port performance indicators are said to be divided in two broad categories, which are financial and operational. Financial aspects measure a quantitative contribution on a port's economic activity, whereas operational aspects evaluate the effectiveness of port operations such as service time, arrival time and tons per ship-hour at berth.Multi-criteria approach is also a method used to measure dry port performance. Several studies (such as Bentaleb et al. (2015), De Icaza1 and Parnell (2018), Bagočiusa et al. (2013), Da Cruz et al. (2013), Jafar et al. (2019), Madeira Junior et al. (2012), etc.) applied Multi-criterial approach to assess port performance. Bentaleb et al.

1.2. Statement of the Problem

Over 90 percent of Ethiopia's total import-export trade is carried out through the port of Djibouti. Djibouti is the main port for sea transport in and out of Ethiopia, and situated 900 km from Addis Ababa, making the cost of in-land transportation an important factor. According to the World Bank's "Doing Business" study in 2015, it costs US$2,960 to import a container to Ethiopia (and US$2,380 to export), compared with US$800 to import and US$ 823 to export in China and US$600 and US$610to import and export respectively in Vietnam. Thus, poor trade logistics is a key contributing factor of Ethiopia's poor performance compared to the Asian countries. Annually, Ethiopia paid for port services to Djibouti 2 billion birr in 2006 (Robera, 2011:51), US$ 700 million in 2009 (UN, 2013:17), and $850 million in 2010 (Getachew, 2017:5) for port services.

According to (IMF 2014) the estimated total transit costs have been consuming over 16% of Ethiopia's foreign trade value which is about two million US$ per day. High cost of charges, reduced free time for imported cargos, the untimely availability of empty containers for export cargos and inadequacy of storage facilities remain the major factors that escalated Ethiopia's total logistic cost for its import and export trade there by affecting the country's competitiveness in the international trade. As noted by (IMF, 2014) Exporters, importers, ocean carriers, marine terminal operators, truckers, and railroads all experience additional costs when cargo and equipment does not move efficiently through the terminals and when there is congestion. Port congestion can arise from multiple causes, and those causes may vary by port or by marine terminal. These include; labor productivity issues, operators' schedule reliability, inefficiency of the transportation infrastructure connecting a marine terminal to rail and roadways, the amount of land that the port facility has to store containers and conduct operations and shortages of various types of equipment. Those factors are hardly an exclusive or exhaustive list of reasons for port congestion, but it illustrates that the problem is not caused by a single or simple set of factors.

Dry port users frequently complained about the slow pace goods and service delivered by Modjo dry port that leads to a serious congestion problem in the dry ports which has, in turn, resulted in substantial operating costs for the port and to the customers (Mohammed, 2014). There are different studies done on port performance and determinants. (eg. Mengying 2010; Hiwot 2014; Seid 2014; Khalid 2015; Elshday 2016; Yodit 2016). However, the studies are analyzed using descriptive statistics. Furthermore, the literatures did not identify indicators that determine port performance. The importance of measuring port performance and lack of previous research on factors

influencing port performance have motivated the researcher to conduct this study. Therefore, the study aims to assess the throughout put performance and its determinants of ModjoDry Port.

2. METHODOLOGY

2.1. Research Design and Approach

The research design can be thought of as the logic or master plan of a research that throws light on how the study is to be conducted. It shows how all of the major parts of the research are done. The current study adopted explanatory research design since the objective requires to find out the factors that explain the performance of Modjo dry port. The study used a mixed research approach in which both quantitative and qualitative data were collected to answer the research various research questions posted.

2.2. Data Source and Sampling Design

Data were collected from primary and secondary sources. The respondent categories for primary source were the customers (importers/exporters and transistors) In addition to the primary sources of data, the researcher also utilized secondary data related to current performance and determinants of dry port performance of Modjo dry port and it was collected from company publications.The study incorporated a population group of Modjo dry port customers (importers, exporters and transistors). Therefore, samples were drawn from the population groups. Since the total population of the study was undefined, data were collected from 130 sample customers who were identified using convenience sampling. Apart from these, further data were collected from 41 randomly identified employees of the port.

2.3. Variables and research hypotheses

Taking notes of records, conducting semi-structured questionnaires, in-depth interviews, and employing organizational survey on level of satisfaction in port services were the data gathering tools. Once the total sample size from each population was determined, the required techniques was employed, i.e. both primary and secondary methods, in order to gather relevant information regarding how the service delivery process is executed in the sector, how performance techniques applied, and what was the overall level of users' satisfaction. The primary data required from staff members were collected through a structured questionnaire as well as personal interview was made. The questionnaire consisted of closed ended and open ended types. The closed-ended questionnaire was used for surveying the level of organizational satisfaction in port services. The other source was secondary data. Information related to the entire process as well as the development activities operated each month was collected from different sources.

Table 1: Variables and Hypotheses

Variables	Type	Definition and measurement	Expected sign
Throughput performance	Dependent variable		
Size of dry port	independent variable	Total holding capacity of the port	+
Port machineries	independent variable	Machineries used by the port such as crane.	+
Infrastructure	independent variable	Infrastructural facilities	+
Information capital	independent variable	IC infrastructural facilities	+
Reliability	independent variable	Secure, free of theft ports	-
Human capital	independent variable	Employees skill, knowledge and capability performance	+

Service Cost	independent variable	Service due charge	-

Source: Own compilation, 2019

2.4. Data Analysis Technique

According to Cooper and Emory (1995), data analysis usually involves reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. This section explains how the data is to be captured and analyzed. The data obtained were analyzed with the aid of the statistical package for econometrics (Stata) computer software. Multiple regressions were used to measure determinants of the dry ports performance. Apparently, ordered logistic regression model was estimated to identify the factors that affected the throughput performances of Modjo dry ports. In this research throughput performance was measured using a single-item measure. Respondents were asked to rate the performance of throughput volume on a five-point Likert scale. Since the outcome variables for throughput performance is ordered and categorical, the most appropriate econometric estimation method to apply is ordinal logistic regression (Green 2000). The ordered logit models have come in to wide use as a framework of analyzing ranked responses (Parasuraman *et al.* 1988). Furthermore, according to Williams (2008) Ordered logit models are among the most popular ordinal regression techniques. Hence, for the purpose of this study ordinal logistic regression model was employed and the functional form of ordered Logit Model for customer satisfaction is specified as follows:

$$Y* = \sum_{k=1}^{k} \beta_k \mathrm{X}_{ki} + \varepsilon_k \quad \text{.....(1)}$$

Y*= is a continuous, unobserved and unmeasured latent variable whose values determine what the observed ordinal variable Y equals

Ɛ= is a random disturbance term with zero mean and a standard normal or logistic distribution: Ɛ~N (0, 1). The continuous latent variable Y* has various threshold/cut-off points. (κ is the Greek small letter Kappa.).

The value on the observed variable Y depends on whether or not you have crossed a particular threshold/cut-off points. Thus, when M=3, what we do observed is;

$$\left.\begin{array}{l} Y = 1, \text{ if } Y^* \leq \mu_1 \\ Y = 2, \text{ if } \mu_1 < Y^* \leq \mu_2 \\ Y = 3, \text{ if } \mu_2 < Y^* \leq \mu_3 \end{array}\right\} \quad \ldots\ldots (2)$$

Where: Y, is observed in j number of ordered categories, μs are unknown threshold/cut-off point parameters separating the adjacent categories to be estimated with βs. The continuous latent variable Y* can be rewritten as;

$$Y* = \sum_{k=1}^{k} \beta_k X_{ki} + \mathcal{E} = \ Z_i + \varepsilon_i \ \ldots\ldots (3)$$

The Ordered Logit Model estimates part of the above:

$$Y* = \sum_{k=1}^{k} \beta_k X_{ki} + \mathcal{E} = \ E(Y*) \ldots\ldots (4)$$

Note that, because of the random disturbance term, the unmeasured latent variable Y* can be either *higher* or *lower* than Z. Note also that there is no intercept term. You then use the estimated M-1 cut off terms to estimate the probability that Y will take on a particular value. In this case since M=3, the formulas are:

$$\mathrm{P(Y = 1)} = \frac{1}{1 + \ e^{Zi-k1}}$$

$$\mathrm{P(Y = 2)} = \frac{1}{1 + \ e^{Zi-k2}} - \frac{1}{1 + \ e^{Zi-k1}}$$

$$P(Y = 3) = 1 - \frac{1}{1 + e^{Zi-k2}}$$

The cumulative probabilities can also be computed using the form:

$$Prob\ (Y = j) = 1 - L\ (\mu_{j-1} - \sum_{k=1}^{k} \beta_k X_k\ )$$

Where: L (.) Represents cumulative logistic distribution

3. RESULT AND DISCUSSION

3.1 Performance of Modjo Dry Port using Throughput Criteria

Throughput volume concerns the performance of the dry port in terms of entertaining as many containers as possible. Accordingly, more than 48 percent of the respondents replied that the container throughout put performance of the dry port was high; on the other hand, close to 22 percent of the respondents confirmed that the dry port containers throughout put performance were low; additionally, 23.08 percent of the respondents rated at medium the throughout put volume performance. Furthermore, the mean score of 3.46 implied that the throughout put volume performance of the port is high. Although the researcher evaluated the throughput performance indirectly collected from primary data; a four monthly secondary data were also generated. The monthly data were converted to yearly and presented here. Since the year 2008 to 2009 the performance of the throughput was significantly increasing; however the rate showed a slow increment rate after the year 2009 and lastly it went down.

The above graph shows a yearly data of container throughput, which implied the total number of output passed through the port. Here under this topic the monthly data are presented. In the year 2008 a total of 396,015 containers passed through the port, whereas 442,496 and 446,460 containers were passed

through the dry port in 2009 and 2010 respectively. Apart from these a lesser amount of containers were transferred in the year 2011, a total of 432,112 containers were delivered through the dry port. On average 39601.5 containers per month were delivered in 2008, and 44296.8 containers were delivered in the year 2009. On average 44646 and 43211.2 containers per month were transferred in the year 2010 and 2011 respectively. Overall, within these four years 1,717,555 containers were delivered through the port.

Table 2: Modjo dry port container through put performance

Month	**Container through put performance**				
	2008	**2009**	**2010**	**2011**	**Total**
July	32,156	43,305	53,304	39,890	168,655
August	37,180	51,935	55893	42,660	187,668
September	39,170	47,957	52,037	40,151	179,315
October	38,844	46,266	50,218	41,429	176,757
November	43,255	48,186	49,572	45,805	186,818
December	37,816	42,159	45,177	49,613	174,765
January	36,549	41,501	40,284	45,803	164,137
February	41,773	47,181	36,911	49,441	175,306
March	41,942	35436	33,242	37,025	147,645
April	47,330	39,042	29,822	40,295	156,489
Total	396,015	442,968	446,460	432,112	1,717,555
Mean	39601.5	44296.8	44646	43211.2	171755.5

Source: Modjo dry port (2008-2011)

3.2 Descriptive Statistics on the Determinants of Dry Port Performance

Information capital: Under this sub-topic to what extent the information capital was the concern of customers of the dry port. Close to 30 percent of the respondents said that the networks for internal and (or) external communication were poor; on the other hand, more than 35 percent of the respondents replied that the networks for internal and (or) external communication was good. Furthermore, more than 35 percent of the rest of the respondents pointed out that in the dry port, the IT infrastructure system in terms of functionality, compatibility and accessibility in operation was low.

Table 3: Description of information capital at dry port

Information capital	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Networks for internal and/or external communication	12.31	17.69	33.85	20.77	15.38	3.09
Functionality, compatibility and accessibility in operation of IT infrastructure system	14.62	21.54	34.62	22.31	6.92	2.85
Databases, in particular, application for promoting analysis, interpretation and sharing of information and knowledge	16.15	21.54	32.31	18.46	11.54	2.87

Having capability to adopt IT based service to meet customers' specifications	8.46	17.69	30.77	23.08	20	3.28
1 = Very poor	2= Poor	3= Medium		4= High	5=Very-high	

Source: Owen survey (2019)

On the other hand, around 29 percent of the respondents mentioned that IT infrastructure system in terms of functionality, compatibility and accessibility in operation was high. More than 30 percent of the respondents also said that the data bases application, in particular, for promoting analysis, interpretation and sharing of information and knowledge was at high extent as well as the capability to adopt service to meet customers' specifications. Furthermore, the mean of information capital was 3.02 which was rated at medium level.

Human capital: In any organization the human capital quality is a critical factor for the success and performance of organization. 18.46 & 23.08 percent of respondents rated very poor and poor regarding the workforces' knowledge and skills to perform their job; whereas, 15.38 and 17.69 percent of the respondents rated at high and very high level the employee's knowledge and skills to perform their job. The rest 25.38 percent of the respondents replied that the knowledge and skill of employees to accomplish their job was medium. Apparently, more than 27 percent of the respondents confirmed that employees were loyal and committed; however, 35.39 percent of the respondents rated the employee's commitment and loyalty at poorest level; the rest 36.92 percent of the respondents replied that there was a medium level commitment and loyalty in the dry port. In the dry port the work forces of the organization strive to upgrade and enhance the capability work performance in pursuit of meeting customer expectation; this was confirmed by more than 27 percent of the respondents; on the other hand, around 43.8 percent of the respondents didn't see any effort made by the employees to enhance work performance that could meet customer expectations. In this regard, 30 percent of the respondents rated the commitment and effort made by employees at medium level.

Generally, more than 28 percent of the respondents had a positive observation towards the human capital of the organization, around 40 percent of the respondents had a complaint on the human capital of the organization, and the rest 30.76 percent of the respondents put at medium level the human capital of the organization in terms of service delivery. Furthermore, the mean score of human capital is 2.77 which lies between poor and medium level; however, in most literature below 2.8 is considered as poor level; therefore, overall the human capital of the organization was rated poor (Table 4).

Table 4: Human capital at the dry port

Human capital	Scale					
	1	2	3	4	5	Mean
Workforces' knowledge and skills to perform their job is:	18.46	23.08	25.38	15.38	17.69	2.90
Workforce's commitment and loyalty is	22.31	13.08	36.92	19.23	8.46	2.78
Work forces strive to upgrade and enhance the capability work performance	23.85	19.23	30	21.54	5.38	2.65
Total	**21.54**	**18.46**	**30.767**	**18.71**	**10.51**	**2.77**
1 = Very poor 2= Poor	3= Medium			4= High	5=Very-high	

Source: Owen survey, 2019

Service cost: For any trader cost is a sensitive issue since it has a direct implication on the profitability of the business. In relation with this, around 33.08 percent of the sampled customers were not well satisfied with the charge made for goods storage; by contrast, the majority (36.16%) of the respondents replied that the service charge made for storage of goods were proportional and good; the rest, i.e. 30.77 percent of the respondents rated the cost of goods storage at medium level. Apparently, customers also added that as a result of additional costs such as loading, unloading and stuffing costs 37.22 percent of the respondents were not happy; this implies customers perceived that the amounts they pay for those services are high.On the other hand, more than 27 percent of the respondents confirmed that the service delivery payment was proportional and it deserved for the job. Further, 35.38 percent of the respondents perceive the loading and unloading related payments at medium level. The dry port terminal also charges for cargo handling and close to 24 percent of the respondents replied that the cargo handling payment satisfied

them. Conversely, 50 percent of the sampled customers were not well satisfied with cargo handling payment. Considering the service payment close to 40 percent perceived the payment negatively, around 29 percent of the sampled customers perceived the payment positively and the rest 29.80 put the charge of service cost at medium level. Additionally, the mean of service cost was 2.81 which lies between poor and medium levels but it is more close to medium level (Table 5).

Table 5: Perception towards service cost

Service Cost	Scale					
	1	2	3	4	5	Mean
Satisfaction with cost of goods storage	10	23.08	30.77	21.54	14.62	3.07
Satisfaction with cost of (loading/unloading, Stuffing/Unstuffing,warehouse charge)	16.15	20.77	35.38	17.69	10	2.84
Satisfaction with cost of cargo handling charge of a terminal.	22.31	27.69	26.15	14.62	9.23	2.60
Satisfaction with total service cost	15.38	29.23	26.92	20.77	7.69	2.76
Total	**15.96**	**25.1925**	**29.805**	**18.655**	**10.385**	**2.82**
1 = Very poor 2= Poor	3= Medium		4= High		5=Very-high	

Source: Owen survey, 2019

Size of dry port: The size of the port obviously determines the storage capacity of the dry port; accordingly, more than 64 percent of the respondents replied that the storage capacity of the dry port was good Nevertheless, 10 percent of the respondents confirmed that the dry ports storage capacity was not good

enough and rated a low level; the rest 26.15 percent of respondents rated the storage capacity of the dry port at medium level. The customer respondents were also asked about the availability of warehouse and container fright station. More than 60 percent of the customers replied that there was enough warehouse and container fright station. To measure the size of the dry port two questions were used and the grand statistics shows that the capacity of the dry port rated very poor by 1.92 percent of the customers, poor by 9.61 percent of the respondents, medium by 31.53 percent of the respondents, high by 34.61 percent of the respondents and very high by 22.30 percent of the respondents. In addition to these, the mean of dry port size was 3.65 which imply that customers are well satisfied with the size and capacity of the dry port (Table 6).

Table 6: Perception toward size of the dry port

Size of Dry port	Scale					
	1	2	3	4	5	Mean
Storage capacity	0	10	26.15	38.46	25.38	3.79
Availability of warehouse and container fright station	3.85	9.23	36.92	30.77	19.23	3.52
Total	**1.92**	**9.61**	**31.53**	**34.61**	**22.30**	**3.65**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

Port machineries: This part assesses the situations of part machineries. More than 40 percent of the customer respondents responded that in the dry post container handling machineries and equipment's were available at enough extent. On the other hand, 32.12 percent of the respondents confirmed that there were no enough containers handling equipment in the port. The rest 26.92

percent of the respondents neither agreed nor disagreed with regard to the availability of container handling mechanism. Around 34 percent of the respondents also mentioned that the operational effectiveness of machineries were very high.

Table 7: Accessibility of port machineries

Port machineries	Scale					
	1	2	3	4	5	Mean
Availability of container handling equipment's	12.31	20	26.92	27.69	13.08	3.09
Operational effectiveness of machineries	13.85	16.15	36.15	25.38	8.46	2.98
Functionality of dry port machineries	11.54	20.77	36.15	23.08	8.46	2.96
Total	**12.56667**	**18.97333**	**33.07333**	**25.38333**	**10**	**3.01**
1 = Very poor	2= Poor	3= Medium		4= High	5=Very-high	

Source: Owen survey, 2019

More than 30 percent of the respondents replied that the operational effectiveness of machineries were low; in this regard around 36.15 percent of the respondents neither agreed nor disagreed. Furthermore, 32.54 percent of the respondents confirmed that the dry port machineries were well functional, but more than 32 percent of the respondents responded that the dry port machineries were not well functional. In this regard, 36.15 percent of the respondents were neither agreed nor disagreed. Summarizing the whole questions in to one concerning the port machineries 12.56 percent of the customer respondents rated it as very poor, 18.97 percent of the respondents rate poor, 18.97 percent

of the respondents rated medium, 25.38 percent of the respondents rated high and the rest 10 percent rated very high. Furthermore, the port machinery had a mean score of 3.01 which implies that in terms port machineries the dry port was rated at medium level (Table 7).

Dry Port Infrastructure: Infrastructure in this research context means that to what extent the dry port had enough infrastructural facilities. More than 45 percent of the sampled customers replied and rated the availability of port infrastructure at high level, where as 23.08 percent of the respondents rated the port infrastructure at low level. With regard to port infrastructure, 31.54 percent of the respondents rated at medium level. 29.23 percent of the respondents also mentioned that the quality of telecommunication infrastructure and IT service could be rated at high level; 36.93 percent of rated at poor level; the rest, i.e. 33.85 rated at medium level.

Table 8: Infrastructure and facilities at the dry port

Infrastructure	**Scale**					
	1	2	3	4	5	Mean
Availability of port infrastructure	8.46	14.62	31.54	26.92	18.46	3.32
Quality of telecommunication and IT service	13.85	23.08	33.85	20	9.23	2.87
Total	**11.155**	**18.85**	**32.695**	**23.46**	**13.845**	**3.095**
1 = Very poor 2= Poor	3= Medium			4= High	5=Very-high	

Source: Owen survey, 2019

In general, 11.15 percent rated the port infrastructure at very poor level, 18.85 rated at poor level, 32.69 rated at medium level, 23.46 percent rated the port infrastructure at high level and the rest 13.84 rated at very high level. In addition to these, 3.09 was the mean of port infrastructure which lies on medium level; this implies the port's infrastructure is leveled at medium level (Table 8).

Reliability of Modjo Dry Port Service: More than 41 percent of the respondents replied that there was high rate of incidence of cargo damage.Around 30 percent of the respondents rated at low level the incidence of cargo damage in the dry port. The rest 27.69 percent of the respondent rated the incidence of cargo damage at medium level. Apparently, there is high rate of cargo theft; this was confirmed by 30.77 percent of the customers, but more than 47 percent of the respondents rated the cargo theft in the dry port at low level; the rest 22.31 percent of the respondents rated the cargo theft level at medium level. In addition to these, 35.38 percent of the customers replied that cargos were delayed at higher extent in the dry port, whereas more than 42 percent of the respondents replied that cargos didn't delay. The remaining 22.31 percent rated the delay of cargos at medium level. Apart from these, the dry port security is good; this was confirmed by around 23 percent of the respondents. Close to 34 percent of the respondents rated the security at low level while 43.08 percent rated at medium level. Generally, 19.04 percent of the respondents rated the reliability at very poor level, 19.42 percent of the respondents rated at poor level, 28.84 percent of the respondents rated the reliability ate medium level and the rest 18.62 and 14.03 percent of the respondents rated the reliability at high and very high level. Furthermore, the grand mean score of reliability was 2.88; the mean score indicates that the reliability of the dry port is rated at medium level (Table 9).

Table 9: Description of port service reliability

Reliability	Scale					
	1	2	3	4	5	Mea
Incidence of cargo damage	13.85	16.92	27.69	19.23	22.31	3.19
Incidence of cargo theft	27.69	19.23	22.31	20	10.77	2.66
Delay(Dwell time and turnaround time)	22.31	20	22.31	19.23	16.15	2.86
Dry port security	12.31	21.54	43.08	16.15	6.92	2.83
Total	**19.04**	**19.4225**	**28.8475**	**18.6525**	**14.0375**	**2.88**

1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high

Source: Owen survey, 2019

3.3 Determinants of the Performance of Modjo Dry Port

One of the assumptions underlying ordered logistic regression is that the relationship between each pair of outcome group is that same, in other words, ordered logistic regression assumes that the coefficients that describe the relationship between, say, the lowest versus all higher category of the response variable are the same as those that describe the relationship between the next lowest category and all higher category etc. and this is called proportional odd assumption. In order to test the proportional odd assumption brant test was performed; accordingly, if the variables become significant it is the indication of the assumptions are violated; however, if the variables are not significant it means that the assumption is not violated; accordingly, this assumptions are fulfilled (Table 10).

As shown in the previous sub topic all of the assumption was fulfilled except throughout put performance was estimated using ordered logit model. The

dependent variable port performance was represented by throughput performance.

Table 10: Ordinal logistic model test

	Brant test of parallel regression assumption		
Variables	chi2	p>chi2	df
All	14.81	0.832	21
Information capital	17.61	0.501	3
Human capital	16.11	0.301	3
ServiceCost	2.74	0.434	3
Size	1.19	0.755	3
Machinery	2.68	0.444	3
Infrastructure	1.18	0.757	3
Reliability	11.92	0.108	3

Source: Own computation, 2019

Port performance measurement is a challenging issue for most ports. The increased use of containerization and supply chains, the development of new production-distribution-consumption systems, and the increased specialization of the different port markets have all affected port organization management and operation. Understanding the levels of performance achieved is at the core of the strategy of port authorities and operators, in order to deploy strategies that address the needs of port users, increase competitiveness, and thus market shares. The notion of port performance is notably associated with operational issues, i.e. the efficient use of infrastructure, superstructure, and all other resources used. This association has for long affected the structuring of port performance measurement frameworks. The majority of the indicators, or relevant exercises, applied are constructs dealing with the operational productivity of the assets, equipment and productivity factors available (Brooks and Schelling, 2013).

The regression finding, as presented in Table 11, shows that among seven independent variables five of them had shown a significant effect on throughout put performance; and all of the variables information capital, human capital, service cost, size of port and reliability showed a significant and positive effect on throughout put volume performance. Information capital had a significant and positive effect on throughout put performance of the dry port. As observed in the table below, the coefficients of this variable is positive as well as the odds ratio is greater than one. Furthermore, given all the other variables in the model held constant, odds ratio greater than one suggested that, the dry port is more likely perform as the information capital increases. Along with the regression analysis the perception of the employees were also considered, although the regression output indicates information capital determines highly the throughput performance, the descriptive analysis coming from employee's shows a moderate response of human capital towards throughput performance. The description shows the networks data base is applied for internal and external communication at moderate level; while the application of databases for promoting analysis, interpretation and sharing of information and knowledge is at its developing stage.

Human capital also had a positive and significant effect on throughout put performance; the variable human capital had a positive coefficient and odds ration greater than one. Considering other variables in the model held constant as the human capital of the dry port increases it has more likely performance of throughout put volume. Human capital is a critical factor for most companies' profitability and their performance. In line with the regression analysis, the information generated from employees in a descriptive form shows in the dry post there is high access of training and education opportunities that helps to enhance the work forces capability which ultimately shows on the human

capital development of the port. Apparently, the dry port employee's knowledge and skill is high which helps to perform their job well and the commitment of the employees is also appreciable. The combination of good training and skill development program supported by the commitment of the employees makes to have a difference on the throughput performance of the dry port. According to Amah (2006), the goal of human capital management is to make available to the organization qualified manpower to carry out its activities, so that the organization's goal can be achieved. Of all the resources, an organization needs to function properly. Human capital is the only resource that can be motivated, taught, developed and appraised to obtain maximum performance. Eletu and Ukoha (2017) also found out that development is significantly associated with corporate performance; this implies that skills development is considerably important in enhancing corporate performance and expressions towards work in the organization. The nature of services provided by shipping companies forces them to be transnational companies serving more than one country. In general, these companies have access to international capital markets and they are able to hire the best workers from all over the world, although under some restrictions sometimes (Clark, Dollar, and Micco, 2001).

Service cost had also a significant and positive effect on throughput performance; in addition to this variable it had an odds ration greater than one which implies that as the service charged by the dry port increases its throughout put performance more likely to be high. Strandenes & Marlow (2016) states that changes in port pricing have implications for competitiveness of short shipping. Efficient ports strengthen short sea shipping competitiveness with respect to road transport. Thus, port pricing strategies that give incentives to increase port efficiency seem appropriate. Port efficiency is an important

determinant of handling cost. Countries with inefficient ports have higher handling costs. Also, countries with good infrastructure have lower seaport costs. The clear negative relationship shows that countries where ports are considered the most efficient are at the same time the ones whose ports charge the least. In turn, some countries are the worst ranked in terms of their efficiency and also present the highest charges per services (UNIDO, 2016). Ports are congested at times and congestion pricing has been advocated to obtain efficient exploitation of port capacities. The main part of the congestion costs is, however, related to the opportunity cost of vessel time. This reflects both the alternative income that the vessel forgoes by postponing the next fixture and the capital costs of the cargo. The latter of course depends on whether selling the goods is postponed or whether port congestion merely implies that storage time on board the vessel replaces storage time on land (Strandenes & Marlow, 2016).

The size of the port is also contributing positively for the throughout put performance; this variable had a positive and significant effect on throughout put volume. Moreover, the odds ratio greater than one suggests as the size of the port increases it's throughout put performance are more likely to increase. In support of this, the descriptive data collected from employees shows that the storage capacity of the dry port is rated at good level which is also supported by availability of good warehouse and container fright station. The combination effects of the good port size and good storage facilities make the port to have a significant contribution for its throughput performance. Most ports of the world have to provide covered transit warehouses for break-bulk cargo, container freight stations for Less than Container Load (LCL) cargoes, tanks for liquid bulk storage yards for open storage, space and warehouses for long term storage. The facilities have costs for initial capital outlay, maintenance and

operations. Space requirements for shed and open storage capacity are always difficult to determine because of the different characteristics of cargoes presented, and the time cargo will dwell in storage. The port's commercial strategy will also determine the amount of transit space required. If transit space is readily available, the port will attempt to attract cargo by offering a low tariff on storage. Alternatively, if transit space is limited or expensive the port will impose extra dues on storage to speed up delivery times and reduce time in transit (Indian Ports Association, 2013).

Reliability of the port also had a positive effect on throughout put performance. The analysis suggests that odds ratio greater than suggests that as the reliability of the port increases the throughout put performance are more likely to increases. In support of the regression analysis, the port is reliable in terms of security, delay, cargo theft and damage; this means in the dry port there is minimum rate of cargo theft, high security, and damage of containers and products. The low number of cargo theft incidents reported signals either that the utilization of freight is systematically low among goods owners who report incidents, or that the security levels at maritime transport facilities are relatively higher than those at other relevant target transport chain locations from the perpetrators' point of view. The first conclusion is less likely than the second, as the majority of reports come not from different parts. This would signal that the low numbers of incidents represent a relatively low risk for cargo theft at maritime transport facilities in general (EP, 2007).

Table 11: Ordered logistic regression estimation result

Ordered logistic regression Log likelihood = -98.749589					Number of obs = 130 LR chi2(7) = 157.45 Prob> chi2 = 0.0000 Pseudo R2 = 0.6436	
Throughout put	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Information capital	.0787596	.0336052	2.34	0.019	.0128946	.1446246
Human Capital	.0908914	.0386255	2.35	0.019	.0151868	.166596
Service cost	.1253339	.0558147	2.25	0.025	.015939	.2347287
Size of the port	.2281823	.076416	2.99	0.003	.0784098	.3779548
Machinery	.003225	.1060699	0.03	0.976	-.2046683	.2111182
Infrastructure facility	-.1091646	.112936	-0.97	0.334	-.3305151	.1121858
Reliability	.4894916	.1119115	4.37	0.000	.2701491	.7088341
/cut1	10.70872	2.071744			6.648179	
/cut2	14.76926					
/cut3	14.97695	2.463954			10.14769	
/cut4	19.80621					
	18.36342	2.726592			13.0194	
	23.70745					
	22.45413	2.944186			16.68363	
	28.22463					

Source: Own computation, 2019

4. CONCLUSION AND RECOMMENDATION

The dry port concept is based on a seaport directly connected by truck or rail to inland intermodal terminals, where shippers can leave and/or collect their goods in intermodal loading units as if directly at the seaport. In addition to the transshipment that a conventional inland intermodal terminal provides, services such as storage, consolidation, depot, maintenance of containers, and customs clearance are also available at dry ports. The dry port implementation itself certainly is not a straightforward solution for seaport terminal congestion or for

better seaport inland access; however, it could be part of the solution. As the dry port is key logistics channel to the country it contributes to overall poor logistics performance of the country. Thus, the focus of this research was to assess the performance and determinants of Modjo dry port.

The research was conducted to assess the performance and Determinants of dry Port at Modjo Dry Port. Specifically, this research was conducted to assess the performance of Mojo dry port and to identify the determinants of performance of Mojo dry port. As a methodology explanatory research design were employed and data were collected both from customers and employees. Both descriptive and inferential statistics were used to analyze the data such as ordinary least square. The findings of the study generated from the descriptive statistics revealed that human capital of the dry port is rated at poor level; however, information capital, service cost, port machinery, port infrastructure and reliability were rated at medium level. The findings of the study further revealed that the size of the port was rated at higher level. Apart from these the regression analysis of the study suggests that except infrastructure and machinery the other entire variable had a positive and significant effect. Accordingly, the variables information capital, human capital, service cost, size of the port and reliability had a positive and significant effect on throughput performance of the dry port.

The overall assessment of the performance of Modjo dry port was found as moderate, implying it is still functioning with limited capacity. This further indicates that the contribution of the dry port to the overall economy is still limited. Based on the findings, the researcher forwards the following recommendations:

- ✓ The ICT infrastructure of the port needs to be re-engineered and handled by IT specialists who will then integrate various internal systems as well as external systems. When both internal and external systems are integrated, it will streamline the port operations, business processes and reduce some of those barriers like long cargo dwell time, delays in custom and clearance processes, long waiting time of vessels etc.
- ✓ The dry port should have iterative training, which can be short and long term training for employees. The training should be actual skill and which can fill the knowledge gap.
- ✓ In order to increase the reliability of Modjo dry port, the management should have to focus on decreasing cargo damage and cargo theft that leads to high financial risk on customers and also the dry port.
- ✓ In order to increase the throughput volume, customers should receive their containers early. To do so they should have to afford the cost for the service. So the dry port service charges which the port always attempt to negotiate for a lower price are a key driver to attract customers.
- ✓ Strategic leadership along with proper short and lone run intervention to capacitate the port is very crucial to improve the efficiency and effectiveness over time.
- ✓ Finally, but strongly, I recommend other researchers to conduct a more in depth study on the same or related topic of this study by using more preferably other methods of research like longitudinal studies.

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The Impact of Currency Devaluation on the Ethiopian Economy

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Abstract

Devaluation is one of the most important but controversial trade policies recommended by the IMF for most of the developing countries in restoring the trade balance and increasing real GDP growth. To this end, this study identifies and analyzes the impact of currency devaluation on Ethiopian economic growth with the intervening role of five major macroeconomic indicators namely export, import, inflation rate, FDI, and interest rate using mediation analysis with multiple linear regression using 27 years' time series data through SPSS software . Because of the quantifiable behavior of the variables, this study has used quantitative approach to fulfill the major objectives of the research. In addition to this; the overall frame work of the study was designed with causal or explanatory method in order to test the cause and effect relationship between the variables. The result showed that devaluation brought high inflation rate which adversely affected both domestic and international market of the country. Moreover, it increased the rate of growth of imports and decreased the rate of growth of exports; this indicated that devaluation does not have a significant impact on Ethiopian economy. Based on the findings, this study suggests a quick structural economic policy reformation in order to tackle the existing problems of the country. Moreover, there is an obvious need to combine monetary policy measures with fiscal policy in order to promote sustained economic development.

Keywords: *Currency devaluation, exchange rate system, GDP, export, import, inflation rate, FDI, interest rate*

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1. INTRODUCTION

Every nation has three economic goals to attain both in the short and in the long run; these are achieving economic growth, creating more employment and having no or minimum inflation simultaneously. In order to achieve these goals and make their countries better off, countries use monetary and fiscal policies as a strategy and let their nation's aggregate demand curve to shift either to the right or left hand side. Fiscal policy is all about letting the government to collect taxes and spend it on public sectors like infrastructures, education and so on and which mainly focuses only on the domestic economy whereas, monetary policy deals with both domestic and international economy. Meaning, the government can use monetary policy and the exchange rate policy of devaluation in order to affect the domestic and international markets respectively (Fratzscher *et al*, 2014).

Devaluation is mainly government intervention in the exchange rate market of the country to determine the price of Birr in terms of dollar-some kind of government price setting. Simplified, devaluation makes Birr cheaper relative to the dollar, and hence you will need more Birr to get a dollar, compared to the current rate of exchange. In short, you need more Birr to buy a unit of dollar, and the people who can afford to buy dollar declines (Ayano, 2017). There are several reasons behind the need to devalue currencies. Some do it to promote exports and restrain imports. The simplified assumption is this. If the local currency becomes cheaper due to devaluation, foreigners can buy the local export products more cheaply and hence exports will increase. On the other hand, cheaper local currency can serve as an import restraint since foreign products become more expensive in local currency and importers need more Birr to buy foreign products, and hence increase the cost of living.

When it comes to the developing economies like Ethiopia, with limited export promotion power, the devaluation policy measure is mainly related to exchange rate stability due to imbalance between supply and demand of hard currencies. As repeatedly explained by the government officials of Ethiopia, there is severe shortage of hard currencies in Ethiopia caused by limited hard currency earning power of Ethiopia's exports whereas imports have grown folds more than exports. Ethiopia gets dollar from exports and needs dollar for the imports. The gap between the dollar earning and dollar spending capacity leads to part of the current account deficit called trade deficit (export values less than import values). The gap has been expanding every year-even more so in recent years. If you buy something (imports) you have to pay for it via exports, foreign aid in hard currency, remittances, etc. The growing gap between exports and imports is not sustainable. It's important to note that foreign exchange rate crisis is one of the major sources of economic crises that ravaged the economies of a number of countries including Ethiopia.

Therefore, the devaluation of Birr, which has been urged by the World Bank for years, is the policy measure undertaken by the regime to relieve a crippling dollar shortage and meager foreign exchange reserve of Ethiopia. Although the shortage of hard currency is a common phenomenon of poor countries like Ethiopia with limited exports, the widening gap between Ethiopia's earning and spending in hard currency is evidently not sustainable. It can kill economic growth. At worst, it can lead to economic crisis due to currency (exchange rate) crisis since there is vivid evidence of liquidity gap in hard currency in Ethiopia owing to its weak foreign exchange earning capacity. The developing countries economy like Ethiopia were open to different economic problems like increase in current account deficit, continues decline of foreign exchange reserve and high inflation rate at home. To solve these problems some countries forced to

the stabilization and structural adjustment programs with the support of international monetary fund and World Bank. The adjustment programs promote the substantial devaluation of nominal exchange rate. Standing with the objective of structural adjustment programs, Ethiopian government (1992/3-1993/4 like other developing countries applies the macro-economic reform measures including exchange rate devaluation (African development bank, 2000). However, taking devaluation as a solution may not be an easy task as it is not possible to apply in any circumstance to get the desired effects without some unlikely outcomes along with the favored results (Bekele, 1999). Ethiopia's decision to devalue the birr brings to mind Albert Einstein's definition of insanity: doing the same thing over and over again and expecting a different outcome. Beside that the EPRDF regime has done it more than enough number of times to know that the country would not achieve any economic gain by devaluing the currency. It was time the authorities do something else to address Ethiopia's economic malaise.

The previous empirical researches have been reached the major findings on devaluation and its impacts on developing countries economy around the world including Ethiopia. For instance, devaluation has short term contractionary effect and long term expansionary effect on the economic activities of developing countries (Eltalla *et al,* 2013). They analyzed the impacts of devaluation on the Palestinian economy using a computable general equilibrium model. They found that a 15% devaluation of the exchange rate results in a lower real gross domestic product, lower import and low export, lower private consumption and higher inflation. The study by Gylfason and Risager (1984) suggests that devaluations are generally expansionary in developed countries and likely to be contractionary in developing countries. Haile (1999) used a macro simulation approach to study the impact of devaluation on macroeconomic performance of Ethiopia and found that

devaluation would improve the current account balance, while it decreases output and employment. Yilkal (2014) studied the short and long run effects of currency devaluation on output growth in Ethiopia using a vector auto-regression model. The findings showed that currency devaluation is contractionary in the long run and neutral in the short run. On the other hand, depreciation is expansionary in the short run; it is neutral in the medium and long run. That means the conflicting effects of devaluation will be cancel each other and result in zero effect in the long run (Edwards, 1986).

So that, those findings were conducted simply to identify the direct effect of devaluation on economic activities of developing countries including Ethiopia they lacks to identify the reason why devaluation adversely affect Ethiopian economy and lack to analyze the indirect effect of devaluation on economic activities of Ethiopia. As we know that the simplified assumption of devaluation is to increase exports and to discourage imports so it has the indirect relationship with the GDP of the country by affecting both the domestic and international markets of the country. in order to present these issues, this research was done to identify and analyze the impact of devaluation on Ethiopian economic growth by identifying the major causes for the negative impacts of devaluation on Ethiopian economy by testing both the direct and the indirect effect of devaluation on Ethiopian economy with the mediating effect of selected macroeconomic indicators to fill the existing research gaps and to suggests the best possible economic policy that should be applied before using currency devaluation in order to get sustainable economic development in the case of Ethiopia.

In trying to achieve these objectives, this study aimed to identify the benefits and costs of currency devaluation on Ethiopian economic growth by considering economic growth measured by growth domestic product (GDP) as dependent variable and currency devaluation as independent variable with the intervention of export, import, inflation rate, foreign direct investment (FDI), and interest rate that are hypothesized to determine the economic performance of the country by analyzing the past 27 years' time series data from 1992 to 2018 in the context of Ethiopia.

2. LITERATURE REVIEW

2.1. Exchange rate systems

Exchange rate can simply be defined as the current market price of the home currency exchanged for foreign currency (Obstfeld *et al*, 1995). According to (Klein & Shambaugh, 2009) and other many economists there are three main types of exchange rate regimes such as free floating or flexible exchange rate regime, pegged or fixed exchange rate regime, and pegged floating or managed floating exchange rate regime. Though the above mentioned once are basic types of exchange rate regimes.

Free floating (flexible) exchange rate regime: - It is a type of exchange rate in which the value of a nation's currency is allowed to fluctuate based on the demand and supply of the foreign exchange market. The price is determined by market forces of the demand and supply of the foreign currency without any intervention by the government. Therefore, there is a probability of getting different prices for one currency in terms of the other currency with in some specific time interval, following fluctuations in the demand and supply of foreign currency. Free floating exchange rate works without any government intervention and the market automatically adjusts itself when fluctuation occurs in the demand or supply of foreign currency (appreciation or depreciation). The

adjustment process enables the exchange rate to get its new equilibrium price level and which results BOP to react accordingly based on the elasticity of demand and supply of imports and exports and finally end up with getting new equilibrium (Asmamaw, 2008).

Fixed (pegged) exchange rate regime: - In a fixed exchange rate, a country's currency is fixed against the value of another single currency, or to another measure of value, like gold. It is a system in which government plays significant role regarding with deciding the worth of its currency in terms of either a fixed weight of gold, or a fixed amount of another currency. When there is a mismatch between the nation's fixed exchange rate and free market rate of foreign exchange which is determined by the demand and supply of hard currency in the nation, the government obligated to fill the gap by taking from its foreign exchange reserve. The government may interfere in to the market through two different ways. First, it can interfere through buying or selling of its own currency or foreign currencies. Under the fixed exchange rate system, commercial banks have to buy and sell the domestic currency at the determined rate. But the market equilibrium exchange rate may not coincide with the pre announced spot rate. Due to this reason the central banks always maintain reserves of foreign currencies and gold which they can sell in order to intervene in to the foreign exchange market to make up the excess demand or take up the excess supply. Second, Government can simply make trading currencies at any other rate is illegal. In fact this method is rarely used because it is hard to enforce and sometimes it leads to a black market in foreign currency.

Managed (Dirty) floating exchange rate regime: it is a system which combines both fixed and floating exchange rates. On one hand, it allows the market to adjust the exchange rate and arrives at its equilibrium level and on the other hand it allows the government to intervene in to the exchange market

whenever intervention is needed so as to protect the domestic currency, trade balance and nation's economy from external shocks, it might be through buying and selling of currencies or through some other means. In managed floating exchange rate regime, not only the central bank intervenes in to the foreign exchange market but also international agencies such as IMF. The central bank can officially intervene in to the foreign exchange market through buying or selling of foreign exchange against the domestic one by aiming to affect the exchange rate (Sarno and Taylor, 2001).

2.2.Benefits of Currency Devaluation

Increase the Demands for Domestic Produced Goods: - Traditional views in macroeconomics such as Keynesians approach emphasize the expansionary effects of devaluation to output and growth. In this approach output is determined by aggregate demand and devaluation will have positive effect by simulating aggregate demand and output. Devaluation was expected to encourage the production of exportable commodities by shifting resources from non-tradable to tradable (Taye, 1999).

Encourage Competitive Market: - Devaluation can bring growth through improvements in price competition (Harris, 2001). Ac-cording to his discussion, may have led to firms to shift resources from productivity enhancement to output expansion by the reduction in relative their price and would cause profit maximizing firms. As cost of imported goods increase people will shift to domestic goods. Thus increase opportunity to the foreign market and the increase in the consumption of domestic as a result of devaluation will reduce the cost of production (Genye, 2011).

Encourage investment- led growth: - When a currency is devaluated the amount of profit gained by a firm producing in the foreign market increases when converted to the local currency. This increase in profit can be used for the development of the R& D as well as innovations of new technologies. Finally the improvement and introduction of new technologies through profit will decrease their previous cost used which in turn increase output (Paul, 2006).

Control Economic Depreciation: - Devaluation can also be used as one means of increasing growth by stabilizing the economy by increasing exports and improving the current account as well controlling overvaluation of the exchange rate that increases import of goods (Genye, 2011).

2.3.Costs of Currency Devaluation

Despites its expansionary effect devaluation of currency has a negative impact on the growth of a country. (Krugman & Taylor, 1978) mentioned devaluation will induce an increase in profits share of GDP having a negative effect on aggregate demand if the saving propensity of firms and capital owners is higher than for wage earners. For a country that is highly dependent in the non-tradable sector devaluation can have a negative impact. The distribution of resource from the profit gained in the exposed sector to the non-exposed sector and the cost of price for imported goods used for production will not be proportional. Due to this, the unexposed sectors as well as the total output growth will lose (Goldberg, 1990; Stryk *et al*, 2000). Devaluation can result in high profit for firms that are exposed to the market. But sometimes this high profit will make firms idle if there is less competition, favorable situation and finally result in no change in the long run. According to the theory of transformation firms will increase their productivity and become more creative when there is high competition, sudden fall in the demand of products or an increase production cost and result in a low profit (Erixon, 2007).

The increase in price of goods as a result of devaluation may decrease the total money in circulation (real money). Devaluation will push the interest rate up wards and decrease the aggregate demand ceteris paribus. Domestic firms that use bank loan for production will also be affected as a result of the increase in the interest rate. For countries that borrow money and are highly in debt, the increase in interest rate together with devaluation of currency will make situations even worse as the amount will increase (Bird & Rajan, 2003; Domac, 1997).

Countries that use devaluation as one strategy for growth and provide low price in the foreign market may at the end get a zero profit in the long run. This is true for developing countries specially those who are new comers to the world market and devalue their currency with respect to the developed ones, are usually highly in debt. So the gain through lower price will be offset by the increase in the amount of debt in foreign currency which will be more expensive if the country devaluate its currency and will result in stagnancy in the economy (Blecker & Razmi, 2007).

Devaluation of currency in a country where there is a wage indexation may have contractionary effect. When the price of goods increase as a result of devaluation of currency the real wage will fall and producers will be forced to increase the wage rate in order to make workers attain sustainable rate of living cost. This will decrease the profit of producers as their cost will increase (Acar, 2000). The study also shows that the result of anticipated and unanticipated devaluation might have different effects on the long run growth rate. Serven & Solimano (1992) suggested that expected devaluation can have a negative effect on the growth of an economy. The increase in the depreciation of real exchange rate is one factor for the increase in the interest rate. And when investors expect the rise in the depreciation rate they will not be willing to invest and this will

retard investment and hamper growth in the long run. (Courchene, 2002) also added anticipated devaluation will decrease the rate of technology and discourage innovation in investment as investors expect the increase in the price of imported inputs. Whereas when companies don't expect devaluation they won't fear anything so they will invest and it will not have effect on the investment rate. Devaluation is likely to cause inflation because Imports will be more expensive (any imported good or raw material will increase in price), Aggregate demand increases causing demand-pull inflation and Firms/exporters have less incentive to cut costs because they can rely on the devaluation to improve competitiveness. The concern is in the long-term devaluation may lead to lower productivity because of the decline in incentives.

2.4. Empirical Studies from Ethiopia

The empirical studies regarding the effects of devaluation on the economy that focuses on Ethiopia have been very limited. Haile (1994) has attempted to estimate the effect of devaluation on the trade balance using the elasticity approach. According to him, the sum of elasticity's of export and import is greater than one. Since the Ethiopian trade balance was initially in deficit the Marshal-Learner condition is not satisfied and is not enough. He concluded that although devaluation has an inflationary potential, it will have at least a positive effect on the trade balance. Befekadu and Kibre (1994) in their study on the possible effect of the 1992 devaluation on the Ethiopian trade balance, argued that in the short-to-medium term both imports and import substitute goods are unlikely to respond to price changes given the structure of the Ethiopian economy. According to them if devaluation of birr succeeds in decreasing imports, it is likely to reduce capacity utilization and therefore output growth. Thus, the decrease in the current account deficit would be at the cost of the growth of the economy. For them, though the increases in domestic currency

prices are necessary, they are definitely not sufficient to increases the volume of exportable. Furthermore, they argued that the greater foreign exchange availability from higher exports and from easier access to foreign capital made it possible to translate the increase in demand into actual imports. According to (Lencho, 2010) the appreciation of Ethiopian currency (birr) results deterioration of the nation's export and there is a positive relation between GDP and export therefore, whenever the domestic currency got appreciated, both export and GDP would deteriorate in contrary when the domestic currency got depreciated, the nation's GDP would be better off.

Furthermore, by using vector auto-regression techniques (Ayen, 2014) stated that , devaluation is contractionary and leads the national's output to decrease in the long run due to the fact that, whenever devaluation implemented in the economy as a monetary policy, the cost of imported factors of productions get more higher and since Ethiopia primarily imports petroleum and other factors of productions (machineries) for production purposes, an increase in the cost of production discourages producers from producing more outputs therefore, in the long run the nation's output level will decrease.

3. RESEARCH METHODOLOGY

This study was interested to identify and analyze the associations between the dependent variable, i.e. economic growth measured by GDP, the independent variable that is currency devaluation and intervening variables that are export, import, inflation rate, FDI, and interest rate. So, quantitative approach was adopted to fulfill the purpose of this research, since this study was searching for what factors were affecting economic growth of Ethiopia due to currency devaluation, it enables to measure the relationship between those variables and with the quantitative method it is possible to compare different numerical growth measures. On the other hand this study was designed with a Causal

research, also called explanatory research. It is the investigation of cause-and-effect relationships. To determine causality, it is important to observe variation in the variable assumed to cause the change in the other variable(s), and then measure the changes in the other variable(s). The study has used secondary data from documents of the respective government offices namely National Bank of Ethiopia, Central Statistics Agency, and Ministry of Finance and Economic Development based on the past 27 years country's time series data and supplementary data from publications, published theoretical and empirical studies, World Bank annual country reports, and IMF annual country reports were also used to fulfill the research objectives.

In order to analyze the research data, mediation analysis with multiple regressions was conducted to check the relationship between dependent and independent variables with the mediating role of the intervening variables by using software called SPSS version 24 customized with process macro version 33 in order to test both the direct and the indirect effect and to check whether there is statistically significant relationship between the stated variables or not. Significant tests were conducted to ensure the goodness of the regression model. These includes: (1) Normality test, which was tested using the technique of Bera-Jarque (BJ) and skewness and kurtosis values was also checked (2) Test for Heteroscedasticity, which was tested by employing the White heteroscedasticity test approach and (3) the correlation statistics were examined to check the existence of Multicollinearity problem. Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable. The intervening variable, M, is the mediator. It "mediates" the relationship between a predictor, X, and an outcome variable Y. Graphically, mediation can be depicted in the following way:

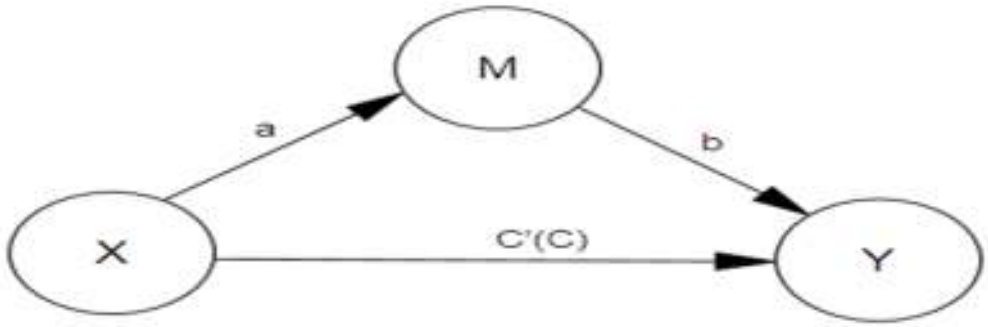

Figure 1: Diagrammatic representation of mediation model

Where Path a, b and c are called direct effects whereas C' is called the indirect effect that means it represents the portion of the relationship between X and Y that is mediated by M.

3.1. Variable definition

This study were examined the cause and effect relationship between one dependent variable GDP, one independent variable devaluation, and five intervening variables export, import, saving rate, FDI, and inflation rate.

Growth Domestic Product (GDP): GDP is one of the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time period, often referred to as the size of the economy. Usually, GDP is expressed as a comparison to the previous quarter or year. For example, if the 2017 GDP of a country is up 3%, the economy of that country has grown by 3% over the third quarter. While quarterly growth rates are a periodic measure of how the economy is faring, annual GDP figures are often considered the benchmark for the size of the economy.

Currency Devaluation: it refers to a decrease in a currency's value with respect to other currencies. A currency is considered devalued when it loses

value relative to other currencies in the foreign exchange market. A currency's devaluation is the result of a nation's monetary policy.

Export: Selling of products or services to customers located abroad from a base in the home country. The exports of Ethiopia and other countries are calculated as the total amount of goods and services produced at home and sold abroad. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services.

Import: Procurement of products or services from suppliers located abroad for the consumption in the home country. Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services.

Inflation rate: Inflation rate is the percentage at which a currency is devalued during a period. This is devaluation is evident in the fact that the consumer price index (CPI) increases during this period. In other words, it's a rate at which the currency is being devalued causing the general prices of consumer goods it increase relative to change in currency value. Inflation can be caused by many different events and circumstances, but the most common is an increase in the money supply. As a floating currency is becomes more abundant, its value starts to decline. This makes sense because it isn't as scarce as it once was.

Foreign direct investment (FDI): FDI is when a company owns another company in a different country. FDI is different from when companies simply put their money into assets in another country what economists call portfolio

investment. With FDI, foreign companies are directly involved with day-to-day operations in the other country. This means they aren't just bringing money with them, but also knowledge, skills and technology. A lot of economists really like FDI, especially when it's flowing from rich countries into poorer countries. The idea is that when international companies come in, they can either shake up an existing industry, because they're bringing competition for the domestic companies that already exist, or can create entirely new industries. FDI can also strengthen local economies by creating new jobs and boosting government tax revenues.

Interest rate: Like any other commodity, money has a price. The price of money is known as the interest rate. For a saver, interest is the return that is received for money deposited in banks or credit institutions. This interest is the price that the banks or credit institutions pay savers for using their money to on-lend to individuals or businesses.

3.2 Model Specification

A four step Baron and Kenny (1986) approach was adopted in order to analyze and test the direct relationship between the variables and significance of the coefficients was examined at each step for each model has developed. The following table represent Baron and Kenny direct effect model.

Table 1: The direct effect mediation model

Steps	Description of the models
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y=B_0+B_1X+e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1X + e$
Step 3	Conduct a simple regression analysis with X predicting Y to test for path C alone, $Y = B_0 + B_1M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, $Y = B_0 + B_1X + B_2M + e$

After testing the direct effect, a two-step Sobel Product of Coefficients Approach was adopted to analyze and test the indirect relationship between the variables. A product is formed by multiplying two coefficients together, the partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, $B{:}B_{indirect}{=}(B_2)\ (B)$. The following table represents Sobel Product of Coefficients indirect effect model.

Table 2: The indirect effect mediation model

Model	*Model specification*
Model 1	$Y = B_0+ B_1 X + B_2 M + e$
Model 2	$M= B_0+ B X+ e$

Where Y= growth domestic product (GDP), B_0=Y intercept, B_1= slope of currency devaluation as a proxy of measuring economic growth, X = currency

devaluation, B_2 = slope of intervening variables, M = intervening variables as a mediator, and e =Error variable.

4. RESULTS AND DISCUSSION

4.1. Results of Descriptive Statistics

This section discusses the results from descriptive statistics analysis. The results of descriptive analysis were processed about the dependent, independent, and intervening variables based on the past 27 years over the year 1992 to 2018. The average performance of Ethiopian economy in percentage of GDP from 1992 to 2018 period found to be 7.44% which indicate the overall performance is positive. There was no big difference between the maximum total GDP percentage equals 13.57% in year 2004, and minimum total percentage of GDP equals -8.67% in year 1992 and the standard deviation for the sample period was higher, its value of 5.46. This result reveals that Ethiopia's economic growth performance is lower and not as planned by the government. In the case of exchange rate depreciation from 1992 to 2018 period found to be 11.41% on average and there was a big difference between the maximum exchange rate depreciation equals 27.66% in year 2018 and minimum exchange rate depreciation equals 2.8% in year 1992 which indicate the existence of unfavorable fluctuation of exchange rate in the country and it is explained by the standard deviation for the sample period was value of 6.33.

In case of inflation measured by annual average rate of GDP deflator from 1992 to 2018 period found to be 9.83% on average which indicate the overall unacceptable rate in the economy. There were big difference between the maximum inflation rate 33.5 in year 2012 due to highly increase of food price in the year, and Minimum inflation rate equals -5.8 in year 2001 when the economy performs less. This shows country's inflation rate varies at high amount showing the economy was not stable explained by the standard

deviation for the sample period was value of 9.72. In case of annual growth rate of foreign direct investment from 1992 to 2018 period found to be 2.32% which indicate low growth rate performance. There were no big difference between the maximum growth rate of foreign direct investment equals 5.46% in year 2016, and Minimum growth rate foreign direct investment equals 0.002% in year 1992 when there was no law and incentives to attract investors. This shows country's performance in attracting investors going well but the growth rate is not enough to bring sustainable development on Ethiopian economy. The standard deviation for the sample period was small, it's value of 1.86.

In the case of average saving interest rate growth from 1992 to 2018 period found to be 5.77% on average which indicate the low interest rate as compared to the rate of growth of country's inflation rate. There was no big difference between the maximum saving interest rate of 11.5% in year 2018 and Minimum saving interest rate equals 2.87% in year 1992. This shows country's saving interest rate is stable with standard deviation for the sample period was value of 2.58. In the case of annual growth rate of export from 1992 to 2018 period found to be 7.41% on average which indicate the overall low performance in the economy. There was big difference between the maximum annual growth rate of exports equals 58% in year 2004 and minimum exports growth rate equals -11.2% in year 2015 when the economy performs less. This shows country's performance in international trade was not good and percentage is fluctuating at high amount explained by the standard deviation for the sample period was value of 14.75.

In the case of annual growth rate of import from 1992 to 2018 period found to be 13.34% on average which indicate the overall low performance in the economy. There was big difference between the maximum annual growth rate of import equals 68% in year 2004 and minimum import growth rate equals -

20.5% in year 1994 when the economy performs less. This shows country's performance in decreasing the rate of growth import was not good and percentage is fluctuating at high amount explained by the standard deviation for the sample period was value of 18.36.

Table 3: Summary Descriptive Statistics

Summary statistics	Dep. variable	Indep. variable	Intervening variables				
	GDP	Devaluation	Inflation	FDI	Interest	Exports	Imports
Mean	7.44	11.42	9.83	2.32	5.77	7.41	13.34
Median	9.52	8.65	10.15	2.05	5.25	3.60	14.05
Maximum	13.57	27.30	33.50	5.46	11.50	58.00	68.10
Minimum	-8.67	2.80	-5.80	0.002	2.86	-11.2	-20.5
Std. Dev.	5.60	6.33	9.72	1.87	2.58	14.75	18.37
Observation	27	27	27	27	27	27	27

4.2.Results of Mediation Analysis with Multiple Linear Regression[1]

This section presents over all the empirical results of the regressions. The evaluation of the mediating effect was done using the Causal Step Method by Baron and Kenny (1986) and Next to this causal step method, the Product-of-Coefficients Test by Sobel (1982) provides as a second measure of the

[11] The assumptions of ordinary least square like Heteroscedasticity test, normality test, and multi co linearity test was performed for both the direct relationship between devaluation and the five intervening variables and the indirect relationship between GDP and devaluation. The results of the tests proved that there were no major problems of normality distribution, heteroscedasticity and multicollinearity.

mediating effect and all results were discussed and presented with the reference of 95% confidence interval.

1. The relationship between GDP and Devaluation

This regression test was conducted in order to test the relationship between the dependent variable GDP and the independent variable devaluation. This test is also called the total effect test. From the above regression results table, the coefficient of 0.3422 means GDP increases by 0.3422 every unit increases of devaluation. On the other hand the R squared value tells about the effect size. The R-squared of 0.1499 means that by knowing the coefficient of devaluation we could explain 14.99 % of the variance in GDP. This is generally considered small size but the meaningfulness of the results does not depend on it.

Table 4: Regression analysis between GDP and Devaluation

Variables	Coefficient	Standard Error	t-statistics	p-value
Constant	3.5339	2.1616	1.6349	0.1151
Devalue	0.3422	0 .1663	2.0575	0.0507
Model summary: R^2=0.1449; F-statistics =4.2335 ; p value = 0.0507				

Source: Author's estimation (2019)

The meaningfulness of this test has depended on the p-value because the p-value says something about the significance of the result. From the regression result, the calculated p-value is 0.0505; it is greater than the pre chosen significance level so that devaluation is not the determinant of economy in the context of Ethiopia but the result of the direct effect analysis is not enough to make the final decision the indirect effect analysis is must be conducted in order to analyze the mediating effect of the intervening variables on GDP to make the final conclusion.

2. The Relationship between Devaluation and Intervening Variables

From the above mathematical presentation of the regression model, the following interpretations has presented below. In the case of relationship between devaluation and inflation rate, the coefficient of 0.2658 means inflation increases by 0.2658 every unit increases of devaluation. The R-squared of 0.03 means that by knowing the coefficient of devaluation we could explain 3 % of the variance in inflation. From the above test, the calculated p-value is 0.03976; it is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship. In the case of relationship between devaluation and FDI, the coefficient of 0.1333 means FDI increases by 0.1333 every unit increases of devaluation. The R-squared of 0.2043 means that by knowing the coefficient of devaluation we could explain 20.43 % of the variance in FDI. This is generally considered medium size. The calculated p-value from the above table is 0.0205, and its value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

Table 5: Summary of regression analysis between Devaluation and intervening variables

Intervening variables	Coefficient	Standard Error	t- statistics	p-value
Inflation	0.2658	0.3087	0.8612	0.0397
FDI	0.1333	0.0537	2.4821	0.0205
Interest rate	-0.0688	0.0821	-0.8379	0.0410
Export	-0.7164	0.4526	-1.5829	0.1265
Imports	0.0668	0.5919	-0.1128	0.9111

Source: Author's estimation (2019)

In the case of relationship between saving rate and Devaluation, the coefficient of -0.0688 means annual saving interest rate decreases by 0.0688 every unit increases of devaluation. The researcher like Yohannes (2017) has found that the raised interest rate to 7 percent from 5 percent to stimulate savings as well as to counter inflation was not proportional to the existing inflation rate of the country. The R-squared of 0.0284 means that by knowing the coefficient of devaluation we could explain 2.84 % of the variance in saving rate. This is generally considered small size. The calculated p-value from the above table is 0.0410, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

In the case of relationship between Export and Devaluation, the coefficient of -0.7164 means exports of goods and services decreases by 0.7164 every unit increases of devaluation. Like Bersufekad (2017) has found that annual growth rate of exports of Ethiopia have run under a decreasing rate and it affects the total growth of GDP of the country due to devaluation. The R-squared of 0.0945 means that by knowing the coefficient of devaluation we could explain 9.45 % of the variance in export. This is generally considered small size. The p-value from the above table is 0.1265, and this value is greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship.

In the case of relationship between Import and Devaluation, The coefficient of 0.0668 means imports of goods and service increases by 0.0688 every unit increases of devaluation. Like Bonsa (2014) has found that the value of goods and services registered by Ethiopia as imported have consistently in an increasing rate and it affects the total growth of GDP of the country due to devaluation. Eshetu (2017) also found the result that devaluation has not

discouraged imports and improved trade deficit, currently, the problem has continued, such that, import is near unresponsive to the devaluation of the currency and its value has increased by more than export value and this has led to further deterioration of the trade balance of Ethiopia. The R-squared of 0.0501 means that by knowing the coefficient of devaluation we could explain 5.01 % of the variance in import. This is generally considered small size. The p-value from the above table is 0.9111, and this value is greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship.

3. The Relationship between Intervening Variables and GDP

This regression analysis was conducted in order to test the relationship between the intervening variables and GDP. From the results of the regression model, the following interpretations has presented as follows. In the case of relationship between GDP and Inflation, the coefficient of - 0.0861 means GDP decreases by - 0.0861 every unit increases of inflation. This result supports prior expected sign of the coefficient as found by Ghura (1998) and Madhavi (2008), due to fluctuation in inflation rate was high from its standard deviation GDP growth were not as it has planned and expected. On the other hand the R squared value tells about the effect size. The R-squared of 0.3995 means that by knowing the coefficient of inflation we could explain 39.95% of the variance in GDP. This is generally considered medium size. From the above test, the calculated p-value is 0.0118; it is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

In the case of relationship between GDP and FDI, The coefficient of 0.036 means GDP increases by 0.036 every unit increase of FDI. Even though the coefficient is positive, the result in case of Ethiopia is not as expected and prior

researches like Haider & Chaudhary (2013) found that foreign direct investment have a positive significant impact on GDP growth. The R-squared of 0.95 means that by knowing the coefficient of FDI we could explain 95% of the variance in GDP. This is generally considered large. The result of the calculated p-value from the above table is 0 .000, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship. In the case of relationship between GDP and saving rate, the coefficient of - 0.1728 means GDP decreases by - 0.1728 every unit increases of annual saving interest rate. The R-squared of 0.2598 means that by knowing the coefficient of saving rate we could explain 25.98% of the variance in GDP. This is generally considered small size. The p-value from the above table is 0.0099, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

In the case of relationship between GDP and export, the coefficient of 0.0433 means GDP increases by 0.0433 every unit increase of export. The R-squared of 0.3101 means that by knowing the coefficient of export, we could explain 31.01% of the variance in GDP. This is generally considered medium size. The p-value from the above table is 0.0909, and this value is also greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship. In the case of relationship between GDP and Import, The coefficient of -0.0248 means GDP decreases by 0.0248 every unit increase of imports. The R-squared of 0.3101 means that by knowing the coefficient of import, we could explain 31.01% of the variance in GDP. This is generally considered medium size. The p-value from the above table is 0.0624, and in this case the p-value is greater than the significance level (i.e. $p < 0.05$). But it does not mean that the two variables are

statistically non-significant before tasting the indirect effect relationship between the stated variables. The mathematical presentation of the regression model is presented as follows.

Table 6: Regression Analysis between GDP and the Intervening Variables

Variables	Coefficient	Standard Error	t-statistics	p-value
Inflation	-0.0861	0.0315	-2.7341	0.0118
FDI	0.036	0.612	1.3106	0 .000
Saving rate	-0.1728	0.1315	-1.3141	0.0099
Exports of goods and services	0.0433	0.0230	1.8780	0.0909
Imports of goods and services	-0.0248	0.0182	1.3627	0.0624

Source: Authors' estimation (2019)

4. The Mediating Effect of Intervening Variables

As the researcher stated earlier, Sobel product of coefficient approach was adopted in order to test the indirect relationship between GDP and devaluation with the mediating role of the intervening variables. The mediation effect was calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore (B_1B_2) represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent

variable through the mechanism of the mediator. The product of coefficient value for the mediating effect of inflation on GDP is -0.0228. That means GDP decreases by -0.0228 every unit increase of devaluation with the mediating role of inflation. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.0028).Therefore, devaluation has a negative significant impact on GDP with the intervention of inflation. The product of coefficient value for the mediating effect of FDI on GDP is 0.0047. That means GDP increases by 0.0047every unit increase of devaluation with the mediating role of FDI. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.000).Therefore, devaluation has a positive significant impact on GDP with the intervention of FDI.

The product of coefficient value for the mediating effect of saving rate on GDP is 0.0118. That means GDP increases by 0.0118 every unit increase of devaluation with the mediating role of saving rate. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.0314).Therefore, devaluation has a positive significant impact on GDP with the intervention of saving rate. The product of coefficient value for the mediating effect of export on GDP is -0.0310. That means GDP decreases by -0.0310 every unit increase of devaluation with the mediating role of export. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.140).Therefore, devaluation has a negative non-significant impact on GDP with the intervention of export. In the context of Ethiopia, the ongoing extensive investments on infrastructure have led to widening of gaps in investment and saving (17.5% of GDP in 2014/15) and in the external sector (Zerihun *et al*, 2016). According to the report, these macro-economic

imbalances have in turn led to increase in external borrowing. Consequently, the stock of external public debt has soared fivefold from USD 2.8 billion in 2008/09 to USD 19 billion in 2014/15. The sharp increase in the stock of public debt has been driven primarily by major import intensive public enterprise investments and very slow moving export performance. The report shows that these poor performance and volatility in exporting and an ever-increasing demand for imports are the main reasons behind the worsening trade-account deficit. On the other hand, the product of coefficient value for the mediating effect of import on GDP is -0.0017. That means GDP decreases by -0.0017every unit increase of devaluation with the mediating role of import. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.0624). Therefore, devaluation has a negative non-significant impact on GDP with the intervention of import.

5. CONCLUSION AND RECOMMENDATIONS

The results of the mediation analysis showed us that as devaluation applies in the economy, the nation's export is negatively affected during the last four years but exports are increased to some extent but unlike the theoretical expectations, instead of decreasing the nation's imports demand, devaluation has a positive impact on Ethiopian imports. Additionally, since the coefficient of the currency devaluation variable is not statistically significant with both exports and imports of goods and services. It can be said that exchange rate is not one of the determinant factors of exports and imports for Ethiopian economy. Since the nation's production is highly dependent on imported goods and essential inputs for agricultural products as well. The adoption of the policy of devaluation makes the cost of production to rise and this might lead the domestic production to decrease or not to grow up as it was expected. In addition to this, cost of a

nation's imports exceeds the cost of its exports this lead the nation to trade deficit (It's one way of measuring international trade, and it's also called a negative balance of trade). You can calculate a trade deficit by subtracting the total value of a country's exports from the total value of its imports. Therefore, in order to fill the gap between the domestic demand and domestic supply of the economy, imports are the only choice that the nation has even if it is very expensive and hard to afford.

In Ethiopia, inflation has been very high and among the factors, the devaluation of domestic currency, increase in money supply and an increase in the world commodity prices were perceived to be the most important. It was in this context of high inflation and foreign exchange crunch, that the World Bank has advised the country to devaluate its currency. When this policy was applied over and over again, the prices of almost all commodities and services have sharply increased and have resulted in a rise in the general price level. In other words, the immediate effect of devaluation was acceleration in inflation. Thus, the increased inflation in Ethiopia, owing to the devaluation of Birr once again establishes the fact that there is a direct relationship between devaluation and inflation. Hence, one of the important factors in the persistence of high inflation in Ethiopia has been the frequent devaluation of Birr. This may be partly due to the increase in government debt and due to an increase in the cost of public investment. Because of that the nation's goods may become less competitive in the international market, which leads to a fall in demand for that nation's goods, which in return lessen exports of the nation as no one would like to buy at high price. Which may also create a deficit in the current account balance as we know when import is higher than export, it creates deficit in the balance of trade. Therefore, a continuous and high devaluation of currency may possibly bring evil consequences on Ethiopian economy. Several studies have established that

exchange rate movement impact on FDI. When a currency depreciates, meaning that its value declines relative to the value of another currency, this exchange rate movement has two potential implications for FDI. First, it reduces that country's wages and production costs relative to those of its foreign counterparts. All else equal, the country experiencing real currency depreciation has enhanced location advantage or attractiveness as a location for receiving productive capacity investments. By this relative wage channel, the exchange rate depreciation improves the overall rate of return to foreigners contemplating an overseas investment project in this country and vice versa for a currency appreciation (Goldberg, 1993). Even though FDI in to Ethiopia has a positive impact on economy it has declined by 10% to $3.6 billion in 2017 as compared to the previous year. One good reason for that is the existence of high inflation rate in the country and this can make investments less desirable, since it creates uncertainty for the future. On the other hand Ethiopia highly dependent on imported factor of production. This also makes their production cost very expensive and they are expected to set higher prices on their products and this may leads the domestic market less attractive and less competitive. Lack of inputs for the manufacturing companies, which often couldn't get the hard currency on time is also mentioned as basic challenges of FDI growth not that much as it was expected to be in the country.

Inflation and interest rate have a direct relationship. For example, when the rate of inflation in a given country is 11 percent then it expected to pay at least an interest rate of 11 percent in order to attract big investors and to stimulate saving trends of the country. In the context of Ethiopia recently registered rate of inflation rate was about 10. 9 percent as general inflation in 2019 then the government has expected to pay more than or equal to 10.9 percent interest rate in order to attract saving and choose to spend less. So the existing annual saving

interest rate does not have a potential to stimulate level of inflation rate in Ethiopia. Therefore, we can generalize from the above elaborated issues that depreciation of domestic exchange rate is not a determinant factor for Ethiopian economic growth and there must be an acquit structural economic policy reformation before doing depreciation of domestic exchange rate over and over again without achieving a sustainable and attractive changes on economy unless it hearts instead. Based on the findings of the study, the following recommendations are forwarded in order to tackle economic problems faced by Ethiopia due to currency devaluation.

- **Agricultural diversification: -** Agricultural diversification is the next stage in transforming traditional agriculture to a dynamic, commercial sector. Diversification in the product mix of agriculture, through a shift towards high-value products, has great potential for accelerating growth rates in production.
- **Import substitution strategies: -** demand side policies like devaluation are not effective in making the nation's trade balance better off therefore, rather than focusing only on demand side policies, supply side policies need to be considered and implemented in the economy so as to produce more outputs and achieve economic growth. Since there is a huge gap between the demand and supply of many commodities in the economy, the only means of solving the problem in the long run should be producing them domestically.
- **Export promotion strategies (policies): -** Export promotion policies reflect the interest of national governments to stimulate exports. Subsidies, tax exceptions, and special credit lines are the main instruments used to promote exports. The most effective approaches are: Government fund transfers to selected entities (cash subsidies, tax exemptions, deferments,

preferential tax treatment etc.), Regulatory policies (such as regulatory protection at the border, border tax adjustments, preferential rules of origin) that entail a transfer from one category to another, and Public good provision at no cost or below market price), Government is also responsible to set up favorable policy and institutional frameworks aimed at export promotion, the government must invest on export processing zone and other forms of Special Economic Zones (SEZs) which are demarcated geographical areas within a country's national boundaries where the regulation of firms' activity and the dedicated policies are differentiated from those applied to firms outside the zone, and addressed to creating a policy environment and associated infrastructures that are exporter friendly, for both domestic and foreign producers. Export promotion is sometimes seen as a complementary development strategy to import protection.

- **Import restriction strategies (policies): -** This may be done by fixing import quotas and in some cases by prohibiting the import of some non-essential commodities.
- **Avoiding continuous and high devaluation of currency** to the extent possible to avoid the evil consequences on the economy. That means reducing the money supply or at least stop it from growing. This often involves replacing the existing, near valueless, currency with a new currency. Controlling aggregate demand is important if inflation is to be controlled. If the government believes that aggregate demand is too high, it may choose to 'tighten fiscal policy' by reducing its own spending on public and merit goods or welfare payments and a reduction in company taxes to encourage greater investment.
- **Reducing the money supply: -** directly or indirectly reduce the money supply by enacting policies that encourage reduction of the money supply. Two examples of this include calling in debts that are owed to the

government and increasing the interest paid on bonds so that more investors will buy them. The latter policy raises the exchange rate of the currency due to higher demand and, in turn, increases imports and decreases exports. Both of these policies will reduce the amount of money in circulation because the money will be going from banks, companies and investors pockets and into the government's pocket where it can control what happens to it. And also these 'tightening of monetary policy' higher interest rates can reduce consumer and investment spending. This should be applied for short term till higher inflation rate and the imbalance of payment are controlled.

- **Strategies to encourage Diaspora remittances: -** remittances become an extremely important source of exchange rate for Ethiopia. Even today, remittances play a key role in the Ethiopian economy contributing over 1 percent to the nations GDP. Strategy like reducing remittance fees would increase the disposable income of migrants, boost their incentives to send money home, and encourage the use of formal remittance channels. In addition to this it can also the major component of the balance of payments of the nation.

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Factors Affecting the Performance of Women Entrepreneurs in MSEs in the case of Kolfe Keranyo Sub-city, Addis Ababa, Ethiopia

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Abstract

This study was designed to assess the major factors affecting the performance of women entrepreneurs in MSEs. A sample of 340 women entrepreneurs engaged in 5 sectors were taken for the study using proportionate stratified sampling procedure. Data were analyzed using the ordinary least square multiple regression method. The results of the study indicated that personal characteristics of women entrepreneurs in MSEs and their enterprise affect their performance. It also showed that lack of owned premises (land) to run their business, lack of access to finance, inadequate access to business training, stiff competition in the market, lack of access to technology and lack of access to raw materials were economic-related factors that affected the performance of women entrepreneurs in MSEs. The study also found that conflicting gender roles or household responsibilities, network with outsiders and social acceptability were the major social-related factors that affected their performances. The Agency supporting MSE should give diligent attention to the correlates of performance of MSEs.

Keywords: Performance, entrepreneur, micro & small enterprises, characteristics and factors.

1. INTRODUCTION

The past shows that economic advancement has been developed by pragmatic people who are entrepreneurial and innovative, able to exploit opportunities and willing to take risks (Hisrich, 2005). The role of entrepreneurship and an entrepreneurial culture in economic and social development has often been

underestimated. Over the years, however, it has become increasingly apparent that entrepreneurship indeed contributes to economic development. Nevertheless, a significant number of enterprises were owned by men (ILO, 2006). In other words, it was not common to see women-owned businesses worldwide especially in developing countries like Ethiopia. The idea and practice of women entrepreneurship is a recent phenomenon. Until the 1980's little was known about women entrepreneurship both in practice and research, which made its focus entirely on men. Scientific discourse about women's entrepreneurship and women owned and run organizations is just the development of 1980s (ILO, 2006). Even though we observe a number of women entrepreneurs in the business, recent studies show that most of them are found in Micro and Small Enterprises(MSEs). According to the Ethiopian Central Statistics Authority (2004), almost 50% of all new jobs created in Ethiopia are attributable to small businesses and enterprises, and roughly 49% of new businesses that were operational between 1991 and 2003 were owned by women. According to Aregash as cited in Eshetu and Zeleke (2008), 98% of business firms in Ethiopia are micro and small enterprises. The 3rd census of Ethiopia shows that of the total population of the country (73,918,505), 36,621,848 are females (ECSA, 2007). This accounts 49.5% of the population. This shows that Ethiopia is among those African countries that are known by human resource potential. Regardless of its potential, it does not utilize this labor force.

When we come to Addis Ababa, it is one of the cities in which many women are found. According to the Federal Democratic Republic of Ethiopia's Population Census Commission (FDREPCC, 2014) of the 2,739,551 total population of Addis Ababa city, 1,434,164 are females. More than half of these females are within the age category of 15-59 years which is considered

as a productive age. Though the city is enriched by this greater and productive number of women, it seems that it does not utilize them as expected quality as well as quantity wise. One reason might be similar to that of the country as a whole, which is underutilization of women's potential. In order to make the country, the city and women themselves beneficiaries of this great potential, appropriate measures should be taken to reduce the bottlenecks/challenges that women entrepreneurs in MSEs encounter. Kolfe Keraniyo is one of among the sub-cities of Addis Ababa region, in which a large number of women Entrepreneurs are found. Information taken from Kolfe Keraniyosub-city MSEs Office shows that 2719 women entrepreneurs are found in the sub-city who are working in MSEs. Like the city as a whole, women entrepreneurship problems are tremendous in Kolfe Keraniyo too. To take appropriate measures for these problems, knowing the factors associated with the problems is a precondition for a problem well stated is half solved.

As mentioned in the introduction above, there are a large number of women in Addis Ababa. But the city administration does not yet exploit them very well to contribute a lot for economic development. One of the reasons for this might be problems of women entrepreneurs in MSEs. This is supported by different empirical evidences. For example, Gemechis (2007) and ILO (2009) stressed that entrepreneurs are surrounded by a number of challenges .This forces entrepreneurs in MSEs not to contribute lot to the poverty reduction of the sub-city, region and the country as a whole. This study is different from those researchers discussed above in that their focus areas were in all entrepreneurs regardless of their sex. Besides, they did not see the factors with respect to the different personal, organizational, economic, socio-cultural and legal/administrative matters. Similarly, their studies did not address women entrepreneurs in MSEs. But this study specifically focuses on factors that affect

the performance of women entrepreneurs in MSEs particularly in Kolfe Keraniyo sub-city. Women entrepreneurs in developing countries suffer from gender discrimination in society and laws, underdeveloped enterprise culture, inadequate support system for businesses and underdeveloped markets and infrastructure. Generally, women-owned businesses are concentrated in the low growth segment, face constraints such as poor access to finance, lack of business development services and business networks, limited exposure to business management experience and the challenges of juggling business with household and family responsibilities (Desta Solomon, 2010). Even though women entrepreneurs in MSEs account the greatest proportion of total entrepreneurs in the country as a whole and in Kolfe Keraniyo sub city in particular, there is an acute shortage of studies conducted with a specific objective of analyzing the problems of enterprises operated by women in terms of personal and organizational-related challenges, economic, social/cultural, and legal/administrative. This study is deemed to fill the gaps by identifying specific factors that are responsible for resilience in SMEs operated by women entrepreneurs, and dark light on women specific differentials that affect their performance. Thus, in this study it is thought to assess the different factors that affect the performance of women entrepreneurs in MSEs in Kolfe Keraniyo sub-city. Furthermore, the supports given by different heads and training institutions to MSEs were assessed. More specifically, the study

1. Identifies the perceived impact of economic factors on the performance of women entrepreneurs in Kolfe Keranyo sub city.
2. Investigates the perceived effect of socio-cultural factors on the performance of women entrepreneurs in Kolfe Keranyo sub city.
3. Examines the perceived impact of legal & administrative factors on the performance of women entrepreneurs in Kolfe Keranyo sub city.

2. LITERATURE REVIEW

2.1 Women entrepreneurs in Ethiopia

A national survey conducted by the Ethiopian Welfare Monitoring Unit as sited in Eshetu and Zeleke (2008) shows that women entrepreneurs in Ethiopia are not provided with adequate policy related and strategic support from the national government, and that the promotion of vibrant SMEs should be one of the most important priority strategies for empowering women, addressing abject poverty and unemployment in Ethiopia. Businesses and enterprises operated by women contribute for economic dynamism, diversification, productivity, competition, innovation and economic empowerment of the poorest of the poor. Historically, there has been a well-established tradition of women being involved in small businesses and enterprises. However, it is only recently that women's entrepreneurship has gained the attention of economic planners and policymakers particularly in developing countries in Ethiopia. Although the national government has come to acknowledge that supporting enterprises operated by women promotes gender equality and economic empowerment, the majority of enterprises operated by women face difficulty in terms of access to finance, resources, business skills and institutional support from the national government Ethiopian Ministry of Trade and The studies stressed that SMEs owned or operated by women in Ethiopia survive against tremendous odds of failure.

While it is true that the predominant image of the "Ethiopian woman entrepreneur" is one of poor women trying to survive, there are other profiles. One is of the woman who has, because of higher education and better access to economic and resources, been able to grow her micro enterprise into the small enterprise category (Hadiya, 1998; ILO, 2003).trade and industry of Ethiopia (2003); National Bank of Ethiopia (2002); Negash & Kenea, The studies

stressed that SMEs owned or operated by women in Ethiopia survive against tremendous odds of failure. While it is true that the predominant image of the "Ethiopian woman entrepreneur" is one of poor women trying to survive, there are other profiles. One is of the woman who has, because of higher education and better access to economic and resources, been able to grow her micro enterprise into the small enterprise category (Hadiya, 1998; ILO, 2003).

According to Hadiya, these women believe they are the most neglected category of women entrepreneurs because they do not have institutional credit or other support services available to them. These women have outgrown the micro finance system and yet are not able to borrow from banks. The other profile is of the woman who, because of her higher education, previous work experience, and better economic circumstances, has access to the financial and other resources needed to start and grow larger enterprises. Members of the Ethiopian Women Exporters' Forum (EWEF) are illustrative of this group, although even members of the EWEF complain about inadequate access to commercial bank loans to meet their working capital needs because of the rigid requirement for collateral guarantees (which they often cannot meet). Research has shown that it is possible for women to make the transition from a micro to a small enterprise under the right circumstances. The ILO (2003) study of women in growth enterprises found that 70 per cent of the women entrepreneurs currently engaged in small enterprises had started them as micro-enterprises and grown them over time. Eshetu and Zeleke (2008) identified difficulty in obtaining loan from commercial banks, failure of business/bankruptcy, failure to convert profit back into investment, shortage of technical skills, poor managerial skills, and low level of education as the main challenges that women entrepreneurs in Ethiopia.

Furthermore, ILO (2003) found that lack of suitable location or sales outlet; stiff competition; low purchasing power of the local population; lack of marketing knowhow; seasonal nature of the business ;lack of market information ;inadequate infrastructure; shortage of time (due to multiple tasks) ;shortage of raw materials ;Shortage of working capital are constraints of women entrepreneurs in Ethiopia. A study conducted by ILO (2008) in Ethiopia, the United Republic of Tanzania and Zambia identified that, women entrepreneurs do not have the same access to networks as men; women entrepreneurs have difficulties accessing premises due to, among other things, a lack of property and inheritance rights; women's lack of access to titled assets that can be offered as collateral for loans adversely affects the growth of their enterprises; women entrepreneurs lack access to formal finance and rely on loans from family and community; women entrepreneurs tend to be grouped in particular sectors, particularly food processing and textiles; business development service providers do not give adequate time or effort to target women entrepreneurs – they do not offer flexible arrangements in respect of the timing and location of service delivery; Women often experience harassment in registering and operating their enterprises.

2.2 MSEs and Women entrepreneurs in Ethiopia

Women Entrepreneurs in MSEs are important to almost all economies in the world, but especially to those in developing countries and, within that broad category, especially to those with major employment and income distribution challenges. On what we may call the "static" front, women entrepreneurs in MSEs contribute to output and to the creation of "decent" jobs; on the dynamic front they are a nursery for the larger firms of the future, are the next (and important) step up for expanding micro enterprises, they contribute directly and often significantly to aggregate savings and investment, and they are involved

in the development of appropriate technology. In an increasingly international marketplace, many companies are finding that prosperity is best achieved from specialization, as opposed to diversification. While the majority of the world's largest companies continue to provide multiple services to numerous markets, they now purchase many components and goods from smaller companies that serve one particular niche. As the global marketplace continues to develop, women entrepreneur's in MSEs provide an effective tool for economic growth through participation in global supply chains (World Bank, 2005).

According to Schorling (2006) and ILO (2006) the idea of Micro & Small Enterprises (MSEs) development in Ethiopia emerged as a promising agenda in the 1980s. A variety of reasons have been cited for the surge of interest in MSEs development, like: MSEs are a better way for poverty reduction, MSEs are a platform for sustainable development and productivity, and MSEs are important actors within the trade sector and a platform for economically empowering women and men. In November 1997 the Ethiopian Ministry of Trade and Industry has published the "Micro and Small Enterprises Development Strategy" which enlightens a systematic approach to alleviate the problems and promote the growth of MSEs. Elements of the program include measures with regard to creating an enabling legal framework and streamlining regulatory conditions that hinder the coming up of new and expansion of existing MSEs. In addition specific support programs also include measures related to facilitating access to finance, provision of incentives, promotion of partnerships, training, access to appropriate technology, access to market, access to information and advice, infrastructure and institutional strengthening of the private sector associations and chamber of commerce.(ILO,2003).

The following definition of MSE is from the Ethiopian Ministry of Trade and Industry (1997) and is used to categorize the sector for the purpose of the strategy: Micro Enterprises are those small business enterprises with a paid-up capital of not exceeding Birr 20 000, and excluding high technical consultancy firms and other high tech establishments. Small Enterprises are those business enterprises with a paid-up capital of above 20,000and not exceeding Birr 50 000, -- and excluding high technical consultancy firms and other high tech establishments. The Micro and Small Enterprises Sector is described as the national homes of entrepreneurship. It provides the ideal: environment enabling entrepreneurs to exercise their talents to the full and to attain their goals. In comparison with other countries it is known that in all the successful economies, MSEs are seen as a springboard for growth, job creation and social progress at large.

Schorling (2006) study shows that in Ethiopia's situation MSEs are confronted by various problems, which are of structural, institutional and economic in nature. Lack of Capital, market and working premises, marketing problems, shortage of supply of raw materials and lack of qualified Human resources are the most pressing problems facing MSEs. Although the economic policy of Ethiopia paid due emphasis for entrepreneurship values and appreciation of the sector's contribution to the economy, there are still constraints related to infrastructure, credit, working premises, extension service, consultancy, information provision, prototype development, imbalance preferential treatment and many others, which therefore need proper attention and improvement. According to GTZ (2003) women entrepreneurs in MSEs in Ethiopia are faced with a number of challenges. The following can be the main ones.

- Limited and for some complete lack of access to funds

- Lack of or poor skills of operators and/or the work force in the economy due to underdeveloped Technical and Vocational Education & Training (TVET) system
- Underdeveloped Business Development Services (BDS) market Poor infrastructure
- Weak private sector promotional institutions
- Weak public sector support system

2.3 Factors affecting performance of women entrepreneurs

Women Entrepreneurs have grown in large number across the globe over the last decade and increasingly the entrepreneurial potentials of women have changed the rural economies in many parts of the world. But this does not mean that the problems are totally resolved. In support of this The Centre for Women's Business Research in the United States as sited in UNECE (2004) and Mahbub (2000) identified the following factors that affect women entrepreneurs.

Access to finance: Access to finance is a key issue for women. Accessing credit, particularly for starting an enterprise, is one of the major constraints faced by women entrepreneurs. Women often have fewer opportunities than men to gain access to credit for various reasons, including lack of collateral, an unwillingness to accept household assets as collateral and negative perceptions of female entrepreneurs by loan officers (Mahbub, 2000).

Access to markets: The ability to tap into new markets requires expertise, knowledge and contacts. Women often lack access to training and experience in on how to participate in the market place and are therefore unable to market goods and services strategically. Thus, women-owned SMEs are often unable

to take on both the production and marketing of their goods. In addition, they have often not been exposed to the international market, and therefore lack knowledge about what is internationally acceptable. The high cost of developing new business contacts and relationships in a new country or market is a big deterrent and obstacle for many SMEs, in particular women-owned businesses. Women may also fear or face prejudice or sexual harassment, and may be restricted in their ability to travel to make contacts (UNECE, 2004).

Access to training: Women have limited access to vocational and technical training in South Asia. In fact, women on average have less access to education than men, and technical and vocational skills can only be developed on a strong foundation of basic primary and secondary education. South Asia is characterized by low enrolment among women in education, high dropout rates and poor quality of education.

Access to networks: Women have fewer business contacts, less knowledge of how to deal with the governmental bureaucracy and less bargaining power, all of which further limit their growth. Since most women entrepreneurs operate on a small scale, and are generally not members of professional organizations or part of other networks, they often find it difficult to access information. Most existing networks are male dominated and sometimes not particularly welcoming to women but prefer to be exclusive. Even when a woman does venture into these networks, her task is often difficult because most network activities take place after regular working hours. There are hardly any women-only or women-majority networks where a woman could enter, gain confidence and move further. Lack of networks also deprives women of awareness and exposure to good role models. Few women are invited to join trade missions or delegations, due to the combined invisibility of women-dominated sectors or

sub sectors and of women as individuals within any given sector (Mahbub, 2000).

Policy related factors: Most women have little access to policymakers or representation on policy making bodies. Large companies and men can more easily influence policy and have access to policy makers, who are seen more as their peers. Women tend not to belong to, and eventless reach leadership positions in, mainstream business organizations, limiting their input into policymaking through lobbying. Women's lack of access to information also limits their knowledgeable input into policymaking (UNECE, 2004).

Robertson (1998), OECD (2002), ILO (2008) added that the key factors that affect women entrepreneurs' performance especially in developing continents like Africa are: vulnerability of women to adverse effects of trade reform; restraints with regard to assets(land); lack of information to exploit opportunities; and Poor mobilization of women entrepreneurs; lack of management skills; lack of awareness among young women.

Even though women entrepreneurs in MSEs contribute a lot for the economic development of a country, there are a number of challenges that affect them associated with different factors. For example, according to World Bank (2005), ILO (2003), (SMIDEC, 2004), women entrepreneurs in MSEs are affected by lack of entrepreneurial, managerial and marketing skills; bureaucracy and red tape; lack of accessibility to information and knowledge; difficulties accessing financial resources/Lack of capital; lack of accessibility to investment (technology equipment and know-how) ;nonconformity of standardization, lack of quality awareness and lack of mutual recognition schemes ; Product and service range and usage differences ; language barriers

and cultural differences ;risks in selling abroad ;competition of indigenous MSEs in foreign markets ;inadequate behaviors of multinational companies against domestic MSEs/Lack of government supply-supporting programs ;complexity of trade documentation including packaging and labeling ;lack of government incentives for internationalization of MSEs ;inadequate intellectual property protection; unfavorable legal and regulatory environments and, in some cases, discriminatory regulatory practices; lack of business premises (at affordable rent); and low access to appropriate technology Furthermore, a study made in Malaysia by APEC (1994), shows that the women entrepreneurs in MSEs are facing many challenges, which are attributed to lack of comprehensive framework in terms of policies towards MSEs development; many agencies or channels for MSEs without effective coordination (this leads to lack of transparency to the target groups) ; inadequate data and information on the development of SMEs ; inability to be in the mainstream of industrial development. Many MSEs still occupy lands or sites that are not approved to be used for industrial purposes. There is also an underutilization of technical assistance, advisory services and other incentives made available by the government and its agencies. In addition, there is a lack of skilled and talented workers, which affects the quality of production as well as efficiency and productivity.

2.4 Conceptual framework and Research Hypotheses

2.4.1 Conceptual framework

The major economic factors that affect the performance of women entrepreneurs include finance, market, training, land, information, managerial skills, infrastructures and raw materials (Samit, 2006). The lack of entrepreneurial culture reflected both in education and the media are major challenges for the expansion of entrepreneurship among women and girls.

These are good indicators of socio-cultural influences on individuals running their own business. (Desta Solomon 2010). Factors that affect the performance of women entrepreneurs in MSEs include finance, market, training, land, information, managerial skills, infrastructures and raw material, social acceptability, network, prejudice or class bias, attitude, gender, culture, harassment, business assistance, related to policy makers, legal, institutional and policy constraints, money, bureaucracies, tax, incentives, training, financial, technology, raw material and facility supports.

Nevertheless, the factors must be closely monitored to ensure that stringent measures are taken within the best time to either take advantages of the opportunities or combat their threats.

2.4.2 Research hypotheses

The following hypotheses are formulated for the study based on the conceptual framework discussed above.

$H_0$1: Economic factors will not have significant impact on the performance of women entrepreneurs in MSEs.

$H_0$2: Socio-cultural factors will not have significant effect on the performance of women entrepreneurs in MSEs.

$H_0$3: Legal & administrative factors will not have significant impact on the performance of women entrepreneurs in MSEs.

$H_0$4: TVET supports given to women entrepreneurs will not have significant effect on the performance of women entrepreneurs.

3. RESEARCH METHODOLOGY

The main purpose of this research is to study the relationship between performance as the dependent variable, and factors affecting the performance of women entrepreneurs as the independent variable. The study deployed both

qualitative and quantitative research approach (mixed approach). A combination of descriptive and explanatory research designs were adopted to address the research objectives of this study.

The population of the study consisted of 2719 women entrepreneurs who work in 5 sectors (manufacturing, construction, trade, service and urban agriculture sectors) of MSEs. For selecting sample entrepreneurs, proportionate stratified sampling was used in which the 5 key sectors were considered as strata so as to give equal chance to each of the sectors. A sample of 349 was taken and a total of 340 responded to the questionnaire distributed to them. The sample size was determined following Yemane (1967:886) sample size determination formula, at 95% confidence level and 0.05 precision levels.

$$n = \frac{N}{1 + N(e)^2}$$

Regression was used to describe the relationship between factors affecting the performance of women entrepreneurs. As the relationship between the independent variables was expected to be linear, the major statistical analysis that was used in this study is the ordinary least square (OLS) regression analysis (the simple regression analysis).

4. RESULTS AND DISCUSSIONS

4.1 Characteristics of women owned enterprises entrepreneurs in MSEs

The overall mean of family size have 1.82 indicating that the majority of respondents have family size of 2 implies that which is even less than the average family size in Ethiopia that is 4.8(CSA, 1995).This is contradictory and needs further investigation. Similarly the majority of respondents of number of employees have a mean of 1.90 which implies that majority of respondents have

hired 2 employees. This shows that women entrepreneurs open little employment opportunity. The mean of startup capital is 6811 birr which indicates that the majority of respondents' started their business by 6811 birr. The majority of the respondents about 31.5% are engaged in the manufacturing sector. The construction accounts 28.5% of the respondents. The trade and urban agriculture take the remaining 15.3% and 3.5% respectively. This indicates that the manufacturing sector is increasing at an alarming rate but opens little employment opportunity.

The majority of the respondents about 57.4% establish their enterprise in the form of cooperatives followed by joint ownership 27.4%.The family business and sole ownership take the remaining 10.6% and 4.7% respectively. From this we can interpret the openings of Micro finances allow women to be organized under cooperatives for the purpose of acquiring finance even without collaterals. Cooperatives give these entrepreneurs an opportunity of sharing skills, knowledge and experiences for one common goal which is organizational success. (Hisrich, 2005). Most of the respondent entrepreneurs around 47.1% establish their own business for the reason that they have no other alternatives for income.27.6% of the respondents' start their own business since they want to be self-employed. Only 1.8% of the respondents establish their own business because they believe that it requires a small investment. This is because, had these entrepreneurs be from such a family, they would not have seen starting own business as a last resort. Majority of the respondents about 35.5% start enterprises with their own initiation. Similarly, 28.5% of the respondents start businesses with their friend/partner initiation. It is only 17.9 of the entrepreneurs establish business with an initiation of family. About 72% of the entrepreneurs respond that they have no family member who was an entrepreneur. It is only 29.7% who have an entrepreneur in their family. Of

those women who respond of having an entrepreneur family, 47.4% said that their fathers are entrepreneurs. Similarly, 21.05% respond that their mother is an entrepreneur. 17.89% and 11.58% said that their brothers and sisters are entrepreneurs respectively. It is only about 2.11% who have an entrepreneur grandfather. It is also indicated in the table above that 57.9% of the respondents acquire the necessary skill for their business from formal trainings. Moreover, 15.3% and 14.4% of the entrepreneurs acquire their skills from their family and from other experiences respectively. Only 12.6% of the respondent entrepreneurs acquire the skill from past experiences. The majority of the respondents (80.9%) use micro finances as main source of start-up funding in financing their enterprises. It is also clear that 8.5% of the entrepreneurs use personal saving as their main source of start-up funding. 1.2% of the entrepreneur finances their business from Assistant from friends/relatives and inheritance. Only 0.3% women entrepreneurs' Borrow from relatives or friends/money Lenders as sources of financing their business. Women entrepreneurs in MSEs do not use banks and NGOs as a source of financing. This implies banks, NGOs and other credit institutions are not main source of start-up funding in financing their enterprises. This should be done so that the entrepreneurs in MSEs can get enough access to finance for their business activities.

4.2. Descriptive statistics of factors affecting performance of women entrepreneurs

The major economic factors that affect the performance of women entrepreneurs include finance, market, training, land, information, managerial skills, infrastructures and raw materials (Samit, 2006). As discussed above that microfinance are the main suppliers of finance for women entrepreneurs in MSEs. But in this study shows that women entrepreneurs in MSEs are not

satisfied with the financial access given by micro finances and other lending institutions. It shows 135 respondents (39.7%) strongly disagree and 110 respondents (32.4%) disagree. As the respondents 155 (45.6%), the market access of the respondents entrepreneurs is almost undecided. It seems that these women neither agree nor disagree on the market condition of their products. Most women entrepreneurs in MSEs acquire their skills for establishing their own business from formal trainings. But in this case, the access for different business trainings for the women respondents is disagree with173 (50.9%) and 80 (23.5%) strongly disagree. One success factor for an entrepreneur is having own premises such as land (Hisrich, 2005). The respondent women entrepreneurs in MSEs do not have their own land to run their businesses. The response shows a 137(40.3%) strongly disagree and 83(24.4%) disagree. As the respondents 173 (50.9%) shows that, the respondent Entrepreneurs are disagree on access to information for their business opportunities.

In relation to their managerial skill in running their business, the respondents of 184 (54.1%) are disagree. With regard to technological access and market competition, the respondents of 133 (39.1%) for technology access and 157 (46.1%) for market competition shows that the respondents strongly disagree with a better technological access and with the idea that there is no stiff competition for their products. The 154(45.3%) shows that, the respondents women entrepreneur's in MSEs strongly disagree on the availability of the necessary infrastructures around their working areas. Lastly, the availability of necessary raw materials/inputs shows that the respondent entrepreneurs do not agree with their access to these inputs with 144 (42.4%).This also implies that the performance of women entrepreneurs in MSEs in Kolfe Keraniyo sub-city are highly affected by economic factors such as lack of own premises (land), financial problems, stiff competition in the market, inadequate access to

trainings, lack of technology and raw material. In similar to infrastructures and access to information are problems of women entrepreneurs in MSEs in Kolfe Keranyo sub-city.

The lack of entrepreneurial culture reflected both in education and the media are major challenges for the expansion of entrepreneurship among women and girls. These are good indicators of socio-cultural influences on individuals running their own business. (Solomon 2010).The following shows the current states that these factors have impacted women entrepreneurs in MSEs. The 183 (53.8%) of the respondents shows that women do not like to decide better social acceptability. Similarly, the contact (networks) that women entrepreneurs in MSEs have with outsiders is undecided with respondents of 107 (31.5%). However, they agree in the idea that they have no prejudices or class biases with a 90 (26.5%).Similarly, with regard to the attitude of the society towards their products/services, the respondent women entrepreneurs in MSEs do like to decide on idea that the attitude of the society is positive. On the other hand, in relation to the attitude of other employees towards their business and the relationship that these women entrepreneurs have with their employees, the respondents have a positive relationship with their employee and the attitude of the employees towards the business is positive too. The respondents of 144 (42.4%) agree and 124 (36.5%) strongly agree for the attitude of employees and relationship with employees respectively clearly strengthens this idea. But, these respondents do not agree with the idea of having conflicting gender roles. The respondents of 185 (54.4%) shows that there is different conflicting gender roles for women entrepreneurs in MSEs.

By the same token, issues of gender inequality, cultural influences and harassments are not serious problems for women entrepreneurs in MSEs. The

respondents agree with 107 (31.5%) that there are no gender inequalities. Similarly they agree on the issues that cultural influences and harassment problems are very low. This is justified by the 110 (32.4%) and 129 (37.9%) agree for cultural influences and harassments respectively. This result shows that conflicting gender roles, lack of social acceptability and network with outsiders are the Sever factors that affect women entrepreneurs in Kolfe Keraniyo sub-city. However, class biases, gender inequalities, attitude of employees towards the business and harassments are not problems of entrepreneurs in the sub-city in contrast to other researcher's findings. Besides to the above justifications, the reasons for such changes may be better access to media and other facilities that may change the society's attitude. Of the different factors that hinder entrepreneurial performance, the impact of legal and administrative influences is not to be undermined. The respondent women entrepreneurs in MSEs have business assistant and supports from government bodies. The respondents of 153(45%) shows that these entrepreneurs strongly agree with the issue that they have business assistants and supports from the concerned government officials. To the contrary, these women entrepreneurs disagree with the ideas of having network with administrative bodies and access to policy makers. The respondents of 135 (39.7%) and 125 (36.8%) clearly shows their disagreement for network with outsiders and access to policy makers respectively.

Even though this is the case, agreements are seen among the respondents in relation to the inexistence of legal, institutional and policy constraints. But they strongly disagree on the idea of borrowing money even without collaterals. The respondents 137(40.3%) and 188 (55.3%) for the constraints and collateral matters respectively. The interest rate charged by borrowing institutions and the tax levied on entrepreneurs is not reasonable. They strongly disagree on the

reasonability of the interest rates and disagree tax amount is justified by the respondents of 154 (45.3%) and 120(35.3%) for interest and tax amount respectively. In addition the respondents 'strongly disagree' that the overall legal and regulatory environments do not affect their performance with 153 (45%).With regard to government incentives 117 (34.4%) respondents disagree on it. In relation to bureaucracies and red tapes the respondents agree that it affects their performance with 112(32.9%). this result portrays that incentives, network with administrative bodies, access to policy makers, amount of tax and interest rate charged, request of collateral for borrowing money and the overall legal and administrative environmental factors are the serious problems of women entrepreneurs in MSEs in the sub-city. But, issues related to government bureaucracies and red tapes, legal, instructional and policy constraints, assistance and support from government bodies are not found to be problems of women entrepreneurs in MSEs. This highlights that there are some beginnings in encouraging women entrepreneurs in MSEs even though this is not believed to be satisfactory.

4.3 Factors affecting performance of women entrepreneurs operating under MSE

To understand the impact of factors affecting the performance of women entrepreneurs, data were subjected to regression analysis. Before conducting the analysis, the researcher conducted a multicollinearity test using Variance Inflation Factor (VIF). According to Hair et.al (1995), a VIF value of below 10 or 1/VIF value of greater than 0.10 is acceptable for multiple linear regressions. In this study the assumption is satisfied for all variables as presented in Table 1.

Table 1: Results of Multicollinearity Test

Variable	**VIF**	**1/VIF**
Economic factors	1.28	0.782078
Socio-cultural factors	1.19	0.843765
Legal & administrative factors	1.06	0.939674
TVET supports	1.06	0.942393
Mean VIF	1.15	

Source: Own survey result (2019)

The R-square value, which is the coefficient of determination measures the proportion of the variance in the dependent variable (the performance of women entrepreneurs) explained by the independent variables (economic, socio-cultural, legal & administrative and TVET). The result revealed that 41.1% of the performance of women entrepreneurs are caused by the correlates captured by the independent variables. The ANOVA statistics (F statistic= 58.406, $p<0.01$) denotes that there is a significant positive relationship between the dependent variable (performance of women entrepreneurs) and independent variables (economic, socio-cultural, legal & administrative and TVET). This infers that the overall model was significant. The estimation result is presented in Table 2.

Table 2: Estimation results of factors affecting performances of women entrepreneurs

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Err.	Beta		
Constant	-0.057	0.190		-0.302	0.763
Economic factor	0.272	0.047	0.276	5.824	0.000
Socio-cultural factors	0.353	0.039	0.389	8.988	0.000
Legal & administrative factors	0.109	0.049	0.102	2.243	0.026
TEVT supports	0.297	0.042	0.309	7.150	0.000

Source: Own analysis result based on survey data (2019)

The null hypotheses for economic, socio-cultural, legal & administrative and TVET were all rejected implying that they have significant positive impact on the performance of women entrepreneurs. The performance of women entrepreneurs would rise by 0.272 for every positive increase of economic factors by 1 level provided that other factors (socio-cultural, legal & administrative and TVET) are constant. This is significant at $p<0.01$. The performance of women entrepreneurs in MSEs in Kolfe Keraniyo sub-city are highly affected by economic factors such as lack of own premises (land), financial problems, stiff competition in the market, inadequate access to trainings, lack of technology and raw material. As socio-cultural related factors increase by 1, the performance of women entrepreneurs' increases by a factor of 0.353. The result is significant at $p<0.01$. With regard to socio-cultural conditions, conflicting gender roles, lack of social acceptability and network with outsiders are the factors that affect women entrepreneurs in Kolfe

Keraniyo sub-city. However, class biases, gender inequalities, attitude of employees towards the business and harassments are not problems of entrepreneurs in the sub-city Additionally, holding other factors (economic, socio-cultural and TVET) constant, a unit increase in legal & administrative would lead to a 0.109 increase in the performance of women entrepreneurs, which is significant at $p< 0.05$. In relation to legal/administrative issues, incentives, network with administrative bodies, access to policy makers, amount of tax and interest rate charged, request of collateral for borrowing money and the overall legal and administrative environmental factors are the serious problems of women entrepreneurs in MSEs in the sub-city. But, issues related to government bureaucracies and red tapes, legal, instructional and policy constraints, assistance and support from government bodies are not found to be problems of women entrepreneurs in MSEs. This highlights that there are some beginnings in encouraging women entrepreneurs in MSEs even though this is not believed to be satisfactory.

TVET support would lead to an increase in performance of women entrepreneurs by a factor of 0.297 and it is significant at $p<0.01$. The supports that TVET institutes/colleges provide to women entrepreneurs in MSEs in the areas of technology, machines, technical skill trainings, facility supports, and machine maintenance trainings, marketing trainings, plan and reporting trainings, entrepreneurship trainings, financial supports, machine gifts, raw material supports and customer service trainings are weak. This indicates that TVETs do not give a comparable value to business trainings and other supports.

Studies such as the World Bank (2005), ILO (2003), Samiti (2006), Tan (2000) and SMIDEC (2004) also asserted that the performance of women entrepreneurs in MSEs are affected by a number of economic, social/cultural

and legal/administrative factors. In similar to the findings of World Bank, ILO Samiti, Tan and SMIDEC, this study found that infrastructures and access to information are problems of women entrepreneurs in MSEs in Kolfe. Therefore it is possible to conclude that, even though the establishments of different sub-city administrative services, TVETs, MSEs and micro finances institutions/college are seen in different, the problems identified in this research shows that all are not doing what is expected of them. That is the sub-city administrative in providing working premises (land), the TVETs in training entrepreneurs, the micro finances in providing financial supports and MSEs in recruiting and selecting the youth. All these are joint responsibilities among these stakeholders in bringing women entrepreneurs in MSEs in to high performance. That is why the researcher concludes that much is not done in this regards.

5. CONCLUSION

The characteristics of women entrepreneurs in MSEs of Kolfe Keraniyo sub city shows that they have low entrepreneurial family, they take entrepreneurship as a last resort and others. From this, it is possible to infer that the entrepreneurship trainings is not given to women entrepreneurs in the sub-city; or even though it is given, it may focus on theoretical concepts than deep-rooted practical trainings. Or even if it is delivered practically, attention might not be given by women entrepreneurs. Even if this is the case, women entrepreneurs in MSEs still contribute for the countries development. MSEs are becoming an important area of emphasis for many developing countries in general and to Ethiopia in particular, primarily for its immense potentials as a source of employment given that there are a number of factors that affect their performance. Socio cultural factors, economic, legal & administrative and TVET supports are not minimizing in kolfekeraniyo sub-city and cities like

Addis Ababa they are still tremendous. This can be associated with the effects of globalization that may create intense competitions in the market and poor performances for those entrepreneurs that cannot easily cope up with changes.

For the MSE sector to be vibrant and serve as a springboard for the growth of a strong private sector in Ethiopia training centers like TVET system that supplies disciplined and quality workforce can be considered as one of the necessary conditions. A country with poor human capital has the least chance to develop even if huge capital outlays are invested in all other productive sectors. The production of trained workforce is as important or even may be more important than the production of goods and services. Whatever is produced in the economy to be competitive, both in the domestic and international markets, depends on the quality of the productive workforce the country has. Based on the results of descriptive analysis found that the performance of women entrepreneurs in Kolfe Keraniyo sub city is not good. The finding of the study established that socio cultural factors and TVET supports have relatively more positive influence on the performance of women entrepreneurs in the MSEs.

Given the findings, it is imperative to enhance the potential performance of women entrepreneurs in MSEs by attempting to do the following interventions:

- The Addis Ababa city government bodies should provide affordable alternative sources of finance for women entrepreneurs in MSEs. This can be done by communicating with the banks, NGOs and other credit institutions to lessen their requirements. This should be done so that the entrepreneurs in MSEs can get enough access to finance for their business activities. Moreover, to tackle the different economic, social/cultural and legal/ administrative bottlenecks they face, women

entrepreneurs should make lobbies together to the concerned government officials by forming deep rooted entrepreneurs associations.

- Women entrepreneurs in MSEs of the sub-city should share experiences with other entrepreneurs in other sub-cities and regions or towns so that they can learn a lot from best practices of those entrepreneurs. In addition, the current situation for finding work or competency is very difficult. Therefore, to tackle these problems the entrepreneurs should work very hard.
- To make women entrepreneurs in MSEs competitive and profitable, increasing the capacity and skill of the entrepreneurs through continuous trainings, experience sharing from successful enterprises, and provision of advice and consultancy are crucial. Moreover, improved provision of necessary infrastructure and enabling the environment for business operations is generally an imperative. Uninterrupted power supply and quick transportations are basic to effective performance of these enterprises.
- In the long run, for future generations of women entrepreneurs, two of the most important things are, to improve women's access to education, and effect changes in the cultural, socio-economic environment to accord them higher status and ensure more control over economic resources. Women entrepreneurs in MSEs should have a vision and set goals when developing products in terms of what is to be accomplished, what activities are needed, what products to develop, selection of target markets, responsibilities for which task, what resources are required and how they will be obtained, etc. (i.e. business plan); develop training packages for product development and enable women entrepreneurs to participate in integrated training programs and encourage self- learning;

- Promotion of business linkages between women and large companies and provision of training and advisory services like business mentoring, so as to develop the managerial and marketing skills of women entrepreneurs would also contribute to alleviating internal impediments to the growth of enterprises. Encourage and build the capacity of women entrepreneurs to engage in growth oriented business activities through business development services.

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Efficiency Analysis of Commercial Bank Branches: The Case of Berhan Bank Sh. Co.

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Abstract

Ensuring efficiency is critical for banks to continually play their role of financial intermediary in mobilizing financial resources and channeling towards productive investment ventures. Thus, this study investigates and discusses on the operating efficiency of 61 branches in Berhan bank between years 2015 and 2020. Secondary data from the internal reports of the Bank were used. A non-parametric linear programing model Data Envelop Analysis (DEA) was employed on input variables (personnel expense and other operating expense) and output variables (annual deposit collected) focusing on output-oriented comparison to estimate the operating efficiency of branches. The finding indicates that both technical and scale efficiency of the branches were very low, with an average 31% and 71 %, respectively and it's below the best practice frontier of 1 (100%). Meanwhile, 99 percent of the branches operating at an increasing economy of scale. Therefore, most of the branches are operating below the best practice production frontiers and they have the capacity to improve productivity by 29 percent. By geographic location, Addis Ababa city branches have relatively better efficiency compared to branches located in other regions. Looking at the seasonality of branches, the seasoned ones have better average efficiency than their newest counterparts. Therefore, it is recommended that the Bank should design effective deposit mobilization strategy that networks potential market segments, implement branch standardization by focusing on selection of appropriate benchmarks, attain the branches' most productive scale size through the elimination of scale inefficiencies ,with minimal changes to branches 'scale size (revise overall planning process), on branch level resource allocation, invest on managerial skill of personnel to improve branch level leadership and launch technology banking.

Keywords: Efficiency, data envelop analysis, output oriented, scale efficiency, Berhan Bank, Ethiopia

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INTRODUCTION

Ensuring efficiency is critical for banks to continually play their core role of financial intermediary in mobilizing financial resources and channeling them towards productive investment ventures. The socio-economic environment wherein banks are operating in Ethiopia is characterized by the existence of multitudes of unbanked population, continuously growing national economy and expanding infrastructure necessary for banks to operate more at branch level. In particular, as NBE directed banks to address unbanked population, the banking industry has been competing in branch networking over the last five years. In the study period, one way through which the banks compete and try to maintain or increase the market share was through the branch network. NBE report, in 2018 demonstrated that a private bank branches, on average, has increased from 1,164 in 2014 to 3,159 in 2018[1].

Nowadays, it is common to find two banks sharing one building or working next door to each other, and it clearly indicates how they are fragmented and competing for unnecessary cost of office rent (Abebe, 2020). Besides, Berhanu (2015) noted that an internal report of banks revealed that many of the branches failed to mobilize the required level of resource and negatively contributed towards the bank's performance as opposed to others which used the same amount of input; other branches are recording below average and serving as cost center of the bank. Therefore, unless they allocate the scarce resources efficiently by applying the art of technology and leadership in their daily activity as they employ high skilled human capital their inefficient intermediation will crowd out the use of productive factors in other sectors that can potentially foster economic growth. Thus, inefficient branches must be closed while new ones will be opened in an effort to have a better geographic

[1]Internal report of Private bank's

allocation of branches. If a reconstruction of the branch network is about to take place, it is imperative for a bank to know the efficiency of its branches. Once the efficiency of each branch is known, the management of the bank is in a position first, to rank the branches, second to see where the inefficiency is coming from and third to suggest ways of improving the performance (Noulas, 1994) Thus, the main objectives of this study are to measure the operating efficiency of 61 branches of Berhan Bank in Ethiopia.

LITRATURE REVIEW

2.1. Bank Efficiency Measurement

According to Noulas (1994) the measurement of efficiency has been approached from a variety of dimensions. The traditional approach has used a variant of ratio analysis using a number of financial ratios (e.g., ROA, ROE). Financial ratios can measure the overall financial soundness of a bank or branch and the operational efficiency of its management. Furthermore, it is a short run analysis that may be inappropriate for describing the actual efficiency of the bank in the long-run since it fails to consider the value of management actions and investment decisions that will affect future performance. Hence, limited choice of a benchmark against which to compare a univariate or multivariate score from ratio analysis, ratios fail to consider multiple outputs (services and/or transactions) provided with multiple inputs. The problems in financial ratio analysis have prompted researchers to new ways of measuring efficiency in the banking sector, in order to minimize the above-mentioned limitations of Ratio analysis method. This study used the Data Envelopment (DEA) approach developed by Charnes *et al.* (1978).

2.1.1. Measuring Technical Efficiency and Scale Efficiency

The knowledge of technical efficiency was first proposed by Farrell (1957) based on the works of Debreu (1951) and Koopmans (1951). In the study, he identified two forms of efficiency: technical efficiency and allocative efficiency. Technical efficiency mirrors the ability of a firm to obtain maximum output based on a given set of inputs. Besides, allocative efficiency measures the ability to use the optimal input set based on available prices and production techniques. Technical efficiency and allocative efficiency can be combined to measure the economic efficiency (or overall cost efficiency) of a firm.

2.1.2 Overview of Data Envelope Analysis (DEA)

It is a non-parametric method that utilizes linear programming to measure the level efficiency of comparable decision-making units (DMU) by employing multiple inputs and outputs. DEA, occasionally called frontier analysis, is a performance measurement technique which can be used for analyzing the relative efficiency of productive units. In the case of banks, these are branches having the same multiple inputs and multiple outputs.

2.1.2.1 Basic Types of DEA Model

The two basic assumptions are production at constant return to scale (CRS) and Variable return to scale (VRS). The envelopment surface will differ depending on the scale assumptions that underpin the model. Two scale assumptions are generally employed: constant returns to scale (CRS), and the BCC model by bankers. Charnes-Cooper altered the Constant Return to Scale (CRS) notion to Variable Return to Scale (VRS). The latter encompasses both increasing and decreasing returns to scale. CRS reflects the fact that output will change by the same proportion as inputs are changed (e.g. a doubling of all inputs will double output); VRS reflects the fact that production technology may exhibit increasing, constant and decreasing returns to scale.

2.1.2.2 Input and Output Orientation

The difference between the output- and input-orientated measures can be illustrated using a simple example involving one input and one output. This is depicted in Figure 1 (a) where we have a decreasing return to scale technology represented by f(x), and an inefficient firm operating at the point P. The Farrell input- orientated measure of TE would be equal to the ratio AB/AP, while the output- orientated measure of TE would be CP/CD. The output- and input-orientated measures will only provide equivalent measures of technical efficiency when constant returns to scale exist, but will be unequal when increasing or decreasing returns to scale are present (Fare and Lovell, 1978). The constant returns to scale case are depicted in Figure 1(b) where we observe that AB/AP=CP/CD, for any inefficient point P we care to choose.

One can consider output-orientated measures further by considering the case where production involves two outputs (y1 and y2) and a single input (x1). Again, if we assume constant returns to scale, we can represent the technology by a unit production possibility curve in two dimensions. This example is depicted in Figure 2 where the line ZZ' is the unit production possibility curve and the point A corresponds to an inefficient firm. Note that the inefficient point, A, lies below the curve in this case because ZZ' represents the upper bound of production possibilities.

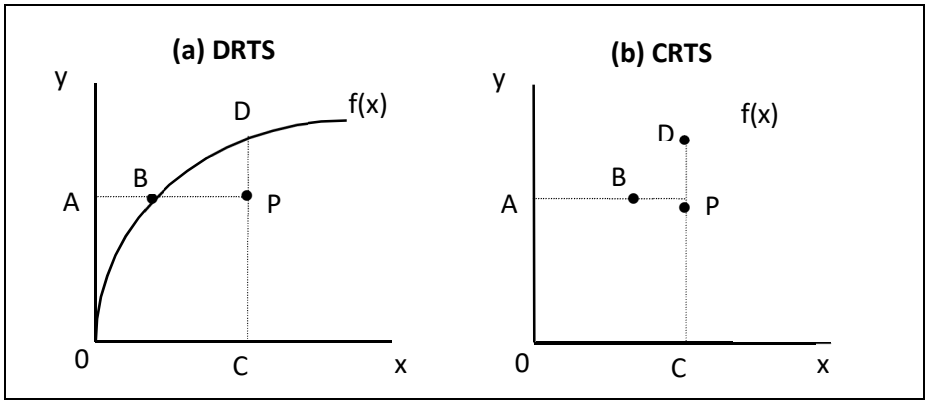

Figure 1: Input- and Output-Orientated Technical Efficiency Measures and Returns to Scale

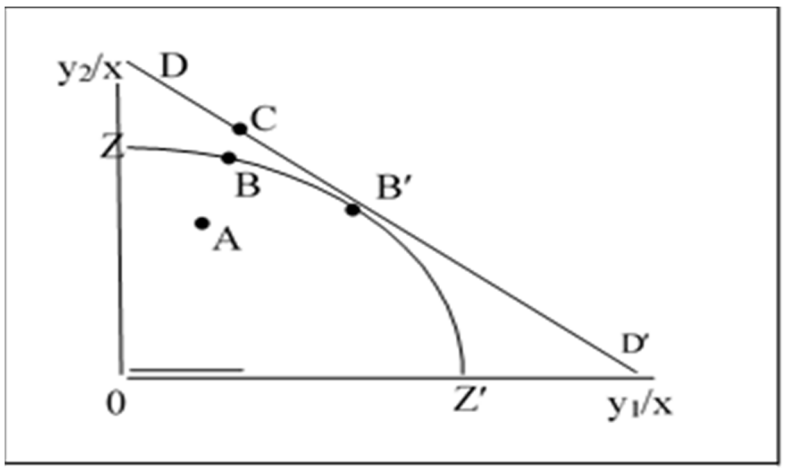

Figure 2: Technical and Allocative Efficiencies from an Output Orientation

The Farrell output-orientated efficiency measures would be defined as follows. In Figure 2 the distance AB represents technical inefficiency. That is, the amount by which outputs could be increased without requiring extra inputs. Hence a measure of output-orientated technical efficiency is the ratio

$TE_O = 0A/0B$……...(1)

If we have price information then we can draw the iso revenue line DD′, and define the allocative efficiency to be

$AE_O = 0B/0C$…….(2)

Which has a revenue increasing interpretation (similar to the cost reducing interpretation of allocative inefficiency in the input-orientated case). Furthermore, one can define overall economic efficiency as the product of these two measures

$EE_O = (0A/0C) = (0A/0B)(0B/0C) = (TEO)(AEO)$……(3)

Again, all of these three measures are bounded by zero and one. Thus, in contrast, with input DEA, the linear program is configured to determine a firm's potential output, given its inputs, if it operated efficiently as firms along the best practice frontier. Output-oriented models are "...very much in the spirit of neo-classical production functions defined as the maximum achievable output given input quantities" (Färe *et al.*, 1994, p. 95)

2.1. Empirical Review

During the late 1980s and particularly in the 1990s, the DEA method has been used extensively to evaluate banking institutions. Violeta and Gordana (2017) assess the relative efficiency of the branches in Komercijalna Banka AD Skopje in Macedonia during a three-year period (from2009 to 2011). Output-oriented DEA window analysis model with VRS assumption obtained results interpreted in the bank and they correspond to the factual situation and the perceptions of the respondents, with the exception of one of the branches which, according to the results, show high inefficiency. For the validation of these unexpected results, the use of AHP-DEA validation model was suggested. The results of

AHP are used for ratio-cone weights restriction in the DEA model. The obtained result by this AHP-DEA validation model is used as more valid.

Majid (2012) studied the efficiency of Indian commercial banks for the sample of 8 commercial banks during 2000 – 2010. Using inputs and outputs analysed based on intermediation DEA approach, the findings revealed that the mean of economic efficiency, technical efficiency, and allocative efficiency are 0.991, 0.995, and 0.991 in VRS model and 0.936. 0.969 and 0.958 in CRR model, respectively. Moreover, the results suggest that Bank of India and ICICI bank are more efficient as compared to other banks in India, and the result confirmed that selected public sector banks are more efficient than private sectors during the study period in India.

Empirical evidence on performance evaluation and efficiency of the banking industry is much researched globally. However, there is dearth of research in Ethiopia and only two studies have been conducted at bank level efficiency. Tadesse (2017) conducted a study to identify the determinants of commercial banks technical efficiency in Ethiopia in the years 2011 to 2014. To estimate the technical efficiency score, DEA was employed on input variables (interest expense, operating expense and deposit) and output variables (interest income, non-interest income and loan). The finding revealed that banks had different levels of efficiency result under constant and variable return to scale. A Tobit model is used to examine the determinants of technical efficiency. It is found that level of capitalization, liquidity risk, return on asset and market share have positive and significant effect on the technical efficiency score.

Tesfaye (2014) assessed the efficiency level of Ethiopian banks for the period 2008-2012 by using DEA approach. The result has shown that the industry efficiency level is at modest level but the technical and scale efficiency of banks is characterized by group variations across different ownership and size; it

causes efficiency variances across various groups such as banks, public banks that gain favourable support from the government in creating easy market for deposit, loans and forex. The study recommended that banks need to improve their efficiency to ensure equalization of banks in technical efficiency and increase their competitiveness at international level, and call the government's support to enhance their capacity to compete.

Literature gap: There was not empirical research done on bank branch efficiency in Ethiopia because branching data generally are confidential and not required by regulators. This paper tries to add to the limited information available about bank branch efficiency. It specifies the Fourier-Flexible nonparametric form for the cost function to characterize the efficient frontier for bank branches, the first application of the form in a frontier efficiency context.

3. RESEARCH METHODOLOGY

3.1 Mathematical Model Specification

The literature distinguishes different approaches in measuring banking efficiency: a traditional approach with simple ratio measurement, parametric and a non-parametric approach in which the specification of a production cost function is required in both approaches. The non - parametric method offers a linear boundary by enveloping the experimental data points known as" Data Envelopment Analysis" (DEA).

In this paper, we have used the output-oriented DEA window analysis model with the variable returns to scale (VRS) assumption for measuring the relative efficiency of the bank branches of Berhan Bank.

Technically speaking, DEA is an approach rather than a model. Unlike the stochastic production frontier (SPF) model where the parameter estimates represent the production elasticity, the resultant weights associated with the input variables have no economic interpretation. Models can be developed, however, to assess allocative and scale efficiencies, congestion, and overall economic efficiency (Färe *et al.*, 2000). Linear programming (LP) models are developed to undertake the DEA, and for the purposes of simplicity, these can be referred to as DEA LP models. An output-oriented approach is generally more appropriate for the estimation of capacity and capacity utilization. Following Färe *et al.* (1989), and Färe *et al.* (1994), the output-oriented DEA LP model of capacity output, given current use of inputs, is shown as:

$$Max\, \emptyset_1$$

S.t

$$\emptyset_1\, u\, j.m \leq \sum_j z\, ju\, j.m^{\cdot} \quad \forall\, m$$

$$\sum_j z\, jx\, j.n \leq x\, j.\dot{n} \quad n \in \alpha$$

$$\sum_j z\, jx\, j.n = \lambda\, x\; j.\dot{n}^{x}\; j.n \quad n \in \tilde{\alpha}$$

$$\sum_j z\, j = 1$$

$$\lambda\, j.n \geq 0 \quad n \in \tilde{\alpha} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Wherein a scalar showing by how much the production of each firm can increase output, $u_{j,m}$ is amount of output m by firm j, $x_{j,n}$ is amount of input n

used by boat *j* and z_j are weighting factors. Inputs are divided into fixed factors, defined by the set, and variable factors defined by the set $\hat{\alpha}$. To calculate the measure of capacity output, the bounds on the sub-vector of variable inputs, $x_{\hat{\alpha}}$, need to be relaxed. This is achieved by allowing these inputs to be unconstrained through introducing a measure of the input utilization rate ($\lambda_{j,n}$), itself estimated in the model for each boat *j* and variable input *n* (Färe *et al.*, 1994). The restriction $\sum_j z_j = 1$ allows for variable returns to scale.

Capacity output based on observed outputs (u^*) is defined as multiplied by observed output (u). Implicit in this value is the assumption that all inputs are used efficiently as well as at their optimal capacity. From this, technically efficient capacity utilization (TECU) based on observed output (u) is:

$$TECU = \frac{u}{u*} = \frac{u}{\emptyset_1 u} = \frac{1}{\emptyset_1} \quad \text{.....(2)}$$

The measure of TECU ranges from zero to 1, with 1 being full capacity utilization (i.e. 100 percent of capacity). Values less than 1 indicate that the firm is operating at less than full capacity given the set of fixed inputs. Implicit in the above is a downwards bias because observed outputs are not necessarily being produced efficiently (Färe *et al.*, 1994). As with the SPF measure of capital utilization, an unbiased measure of capacity utilization is calculated as the ratio of technically efficient output to capacity output. The technically efficient level of output requires an estimate of technical efficiency of each boat, and requires both variable and fixed inputs to be considered. The output orientated DEA model for technically efficient measure of output is given as:

$Max\ \emptyset_1$

s.t.

$$\emptyset_2 u\, j.m \ \leq \ \sum_j z\, ju\, \jmath.m \qquad \forall\, m$$

$$\sum_j z\, jx\, \jmath.n \ \leq x\, \jmath.n \qquad \forall\, m$$

$\sum_j z\, j = 1$ ….(3)

Where F_2 is a scalar outcome showing how much the production of each firm can increase by using inputs (both fixed and variable) in a technically efficient configuration. In this case, both variable and fixed inputs are constrained to their current level (i.e. the equality constraint on the output orientated model of capacity has been relaxed). Again, the restriction $\sum_j z_j = 1$ is imposed to allow for variable returns to scale. In this case, F_2 represents the extent to which output can increase through using all inputs efficiently. From this, technical efficiency is estimated as:

$TE = \frac{1}{\emptyset_2}$………………………………………………………………….(4)

The measure of technical efficiency ranges from one to infinity; F_2 - 1.0 is the proportion by which outputs may be expanded. Some existing software and articles, however, report the value of TE as one over F_2 (see for example, Coelli, Rao and Battese, 1998). Values of the ratio (Eq. 4) less than 1 indicate that, even if all current inputs (both variable and fixed) are used efficiently, output is less than potential output. That is, output could increase through efficiency

gains, without changing the levels of the inputs. The unbiased estimate of capacity utilization is consequently estimated by:

$$CU = \frac{TECU}{TE} = \frac{\frac{1}{\emptyset_1}}{1}\frac{1}{\emptyset_2} = \frac{\emptyset_2}{\emptyset_1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(5)}$$

As, $\Phi_1 \leq 1$ the estimate of CU ³ TECU. Dividing the level of output by the corrected measure of capacity utilization produces lower but unbiased estimates of capacity output.

3.2 DATA and Variables

For the purpose of analyzing the trend of efficiency, annual performance report of 61 branches from years from 2015-2020 were used as secondary data to analyze their efficiency. DEA is a deterministic methodology for examining the relative efficiency, based on the data of selected inputs and outputs of branches. The first step in the analysis was selecting the production approach for measuring the relative efficiency of the branches. According to this approach, the bank branches use labor and capital in order to produce deposits and loans, as stated in Paradi *et al.* (2004, p. 355). Therefore, in the analysis, the following set of inputs and outputs were applied to quantify the efficiency of branches.

Outputs*:* Outstanding Deposit (branches are serving for deposit mobilization center)[2]but deposit balances excluding fixed time deposits of branches were also considered as an output. The fixed time deposit balances were excluded because in some cases fixed time deposits are mobilized at Head Office level without the involvement of branches. Unlike current and saving accounts, fixed

[2] According to Banks' performance evaluation criteria, deposit mobilization is the main factor while loan allocation is done at head office level.

time deposits are mobilized in large volume without requiring the commitment of proportionate resources. Inputs include salary and benefit, expense and other operating expense. The input excludes Interest expense since loan allocation is managed only at head office level.

4. RESULT AND DISCUSSION

In this study, Data Envelopment Analysis model was chosen to analyze technical and scale efficiency under the output-orientation model, with an aim of measuring the operating ability of the sample branches to maximize output. The study was meant to analyze the operating and technical efficiency of branches; however, the branches are limited in resource mobilization (deposit). What is more, this study used deposit mobilization as a primary target of branches, but not allowed to allocate loan and maximize profit.

Accordingly, the DEA model analyzed the technical and scale efficiency level of branches taking into account salaries and benefit and other operating expenses as an input, and the six - year data of branches' outstanding balances of deposits as an output for the years 2015 to 2020. The technical and scale efficiency level of branches under consideration is labeled as the respective efficiencies of branches between 0 and 1. i.e. efficiency score of 1 indicates that the particular branch is on the best practice production frontier; a score less than 1 shows that the branch is beneath the best practice production frontier.: Meanwhile, multi-stage DEA that enables to conduct sequence of projected points with mixed inputs and outputs that ultimately enables economies of scale registered by average increase return to scale (IR), constant return to scale (CRS) and decreasing return to scale (DRS) of the branches.

Technical efficiency of branches. Accordingly, in table 1 below each year values for technical efficiencies (VRS) were found to be in the low range, at about 25 % to 48 % with an average of 31 %. The mean technical efficiency (variable returns to scale) of branch production activities in the bank decreased, from 43 % in 2017 to 25 % in 2020 (figure 1). By geographic location, Addis Ababa city branches have relatively better technical efficiency compared to branches located in another region. In opening dates, the oldest branches have better average efficiency than the youngest branches of the Bank.

Scale efficiency: As mentioned above, scale efficiency is calculated by the ratio between technical efficiency under constant returns to scale and technical efficiency under variable returns to scale, which indicates how optimal a bank's scale is. In this study scale efficiencies were found to be relatively unstable - at around 72 % over the period 2015 to 2020. The mean scale efficiency scores, which is in the range of 61 % and 87 % which decreased from 85 % in 2015 to 71 % in 2020. In this case, the average efficiency scale value of 71% implies that the observed branch operation could have further increase their output by about 29 % if they had reached an optimal scale. However, one should ask: which scale is optimal? Efficiency scales have a relationship to the different forms of returns to scale. The results here show that increasing returns to scale was a dominant characteristic in all periods, reflecting the need to expand production scales in future years in order to attain greater efficiency. In all years, the proportion of increasing returns to scale was 99%, while the optimal scale accounts for only a small proportion, at 1%.

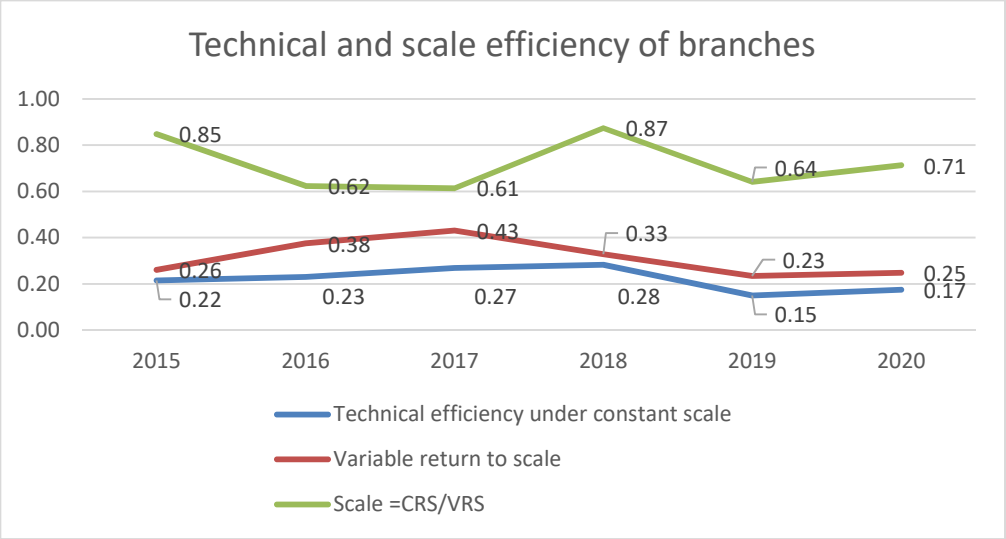

Figure 3: Technical and Scale efficiency of branches

The overall technical efficiency score ranges between technical efficiencies (VRS) were found to be in the low range, at about 25 % to 48 % with an average of 31 %. Similarly, scale efficiencies were found to be relatively unstable - at around 72 % over the study period. The mean scale efficiency scores, which is in the range of 61 % and 87 % which decreased from 85 % in 2015 to 71 % in 2019. In this case, the average efficiency scale value of 71% implies that the observed branch operation could have further increase their output by about 29 % if they had reached an optimal scale. Thus, the banks could improve its output by 29% on average. In other words, banks could have used only 71% of its capacity level of outputs. In all years, allocated inefficiency was higher than technical inefficiency. This problem of selecting the optimal mix of inputs given, the prices can be associated with the industry's aggressive movement in resource mobilizations. As shown in table 1, branches located in Addis Ababa region are more efficient under all the given scenarios (technical and Scale) as compared to other regions. Addis Ababa, however, has better output. On the other hand. The result indicated that branches opened earlier have better

technical and scale efficiency compared to branches opened in the latter period (Table 1).

Table 1: Efficiency Result of branches

	Technical and scale Efficiency under Output oriented		
Branches	Constant to return to scale (CRS)	Variable return to scale (VRS)	Scale efficiency
Addis Ababa City	0.28	0.38	0.75
Regional branches	0.17	0.27	0.67
Amhara region	0.16	0.24	0.67
Oromia region	0.16	0.27	0.67
South Nations and Nationality	0.26	0.40	0.69
Tigray	0.13	0.18	0.74
Branch opened (2009-2012)	0.36	0.43	0.82
Branch opened (2013-2015)	0.17	0.28	0.66
Average	0.21	0.31	0.71

Source: Author's computation

5. CONCLUSION AND RECOMMENDATIONS

According to the DEA output-oriented production approach, the measure of efficiency ranges from 0 to 1, with 1 being full capacity utilization (i.e. 100 percent of capacity). Values less than 1 indicate that the branches are operating at less than full capacity, given the set of fixed inputs. The overall technical efficiency score ranges between technical efficiencies (VRS) were found to be

in the low range. Similarly, scale efficiencies were found to be relatively low and unstable - at around 72 % over the period 2015 to 2020. The results suggest that most branches (99 percent) are experiencing increasing economies of scale by operating below the best practice production frontiers and they have the capacity to improve their productivity. Branches located in the capital city are more efficient as compared to branches located in another region. Furthermore, the sources of branches' inefficiency were contributed from both technical and scale operations where the former has contributed more. The sources of their inefficiency are due to lack of technological dynamism as and the pure technical inefficiency (i.e., managerial inefficiency)

The bank should design effective deposit mobilization strategies that direct sources of potential deposit market segment, include a profit target for branches in the performance management system, and design branch standardization. It should also invest in technology banking and managerial skill of personnel to improve its technical and scale efficiency of branches. Besides, the bank should increase its branch networking at the regions Addis Ababa with better efficiency. Finally, the bank is advised to improve its planning process, the target setting and performance management system of the branches.

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