

**DETERMINANTS OF PROFITABILITY PERFORMANCE OF  
WHEAT FLOUR MANUFACTURING FIRMS: IN CASE OF  
ADAMA CITY**

**A Thesis Submitted for the Partial Fulfillment of the Requirements for  
the Award of Degree of Masters of Science in Accounting and Finance**

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ADAMA, ETHIOPIA**

## **Declaration**

The undersigned, declare that this thesis is my original work, has not been presented for degree in any other university and that all sources of materials used for the thesis have been dully acknowledged.

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This is to certify that the thesis prepared by Wasihun Tussie, under the title of “Determinants of profitability performance of Wheat flour manufacturing firms: in case of Adama City”, submitted for the partial fulfillment of the requirement of the Degree of Masters of Science in Accounting and Finance complies with the rules and regulations of the university and meets the expected standards with respect to originality and quality. Hence all materials contained have been fully acknowledged.

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## Abstract

*The aim of this paper was to examine the factors that determine the profitability performance of wheat flour manufacturing firms in case of Adama City. The study employed explanatory research design to assess the relationship between profitability and its determinant factors. Purposive sampling method was used to select sample wheat flour companies. Balanced panel data was analyzed by using descriptive statistics and correlation analysis. Fixed effect model in the form of multiple regression analysis was applied to analyze the annual data generated from the annual statements of the selected flour factories and annual reports of Ministry of Finance and Economic Development covering a period of 2007 to 2014 G.C. In this study ROA was used as the measure of profitability performance. The paper includes size, operating cost efficiency, capital efficiency, growth, liquidity, tangibility and age of a company as internal independent variables and food inflation rate and real GDP growth rate as external independent factors that determine the profitability of wheat flour manufacturing firms of Adama City. The study found that from the company specific variables capital efficiency, size the firm and age of the firm have significant impact on profitability performance of wheat flour manufacturing firms. Capital efficiency and age of the firm have negative impact on profitability performance. However, size of the firm has a positive significant impact on profitability performance. Tangibility, operating cost efficiency and liquidity are not determinants of profitability. From macroeconomic variables food inflation rate has a positive significant impact on profitability. Whereas, real GDP growth rate has no impact on profitability performance of wheat flour manufacturing's in Adama City.*

**Keywords;** *Internal determinant factors, External determinant factors, wheat flour manufacturing firms.*

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## **List of Acronyms**

ADLI- Agricultural Development Led Industrialization

AWF- Awofat Flour Factor

BOF- Bolo Flour Factory

CAPEF- Capital Efficiency

CLRM- Classical linear Regression Model

CSA-Central Statistic Authority

DW-Dublin Watson

ESH-Efficient Structure Hypothesis

EEA-Ethiopian Economic Authority

GC-Gregorian Calendar

GT- Growth

INFN- Food Inflation

LIQ- Liquidity

MAF- Mohammed Abu-Bakr Flour Factory

MOFED-Ministry of Finance and Economic Development

NOP-Net operating profit

OLS-Ordinary Least Square

OPEF- Operating Cost Efficiency

RGGR- Real GDP Growth Rate

ROA-Return on Asset

ROE-Return on Equity

ROIC-Return on Invested Capital

ROTA-Return on Total Asset

SCP-Standard Conduct and Performance

SNNPR-Southern Nation, Nationality and People Region

SSA-Sub Saharan Africans

SZ- Size

TG- Tangibility

UN-United Nation

YEF- Yerer Flour Factory

YTF- Yisalemush Tekle Flour Factory

# **Chapter One**

## **Introduction**

This chapter of the study introduces the general overview of the study. It includes background of the study, statement of the problem, research objectives, literature driven hypotheses, significance of the study, scope of the study, limitation of the study, conceptual framework of the study and organization of the paper.

### **1.1 Background of the study**

The term profit can take either its economic meaning or accounting concept which shows the excess of income over expenditure viewed during a specified period of time. On one hand, profit is one of the main reasons for the continued existence of every business organization. On the other hand, profit is expected so as to meet the required return by owners and other outsiders. John J. Hampton (2009) clarified profitability ratio as a class of financial metrics that are used to assess a business ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. Accordingly, the term 'profitability' is a relative measure where profit is expressed as a ratio, generally as a percentage. Profitability depicts the relationship of the absolute amount of profit with various other factors.

As cited by N.Sivathaasan et. al. (2013) and defined by Pandey (1980), profitability as an ability of a business, whereas it interprets the term profit in relation to other elements. It is necessary to examine the determinants of profitability to understand how companies finance their operations. A financial benefit is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. Profitability analysis classifies measures and assesses the performance of the company in terms of the profits it earns either in relation to the share holders investment or capital employed in the business or in relation to sales, profit, (or loss). Given that most entrepreneurs invest in order to make a return, the profit earned by a business can be used to measure the success of that investment.

According to Nimalathan (2009) profitability is defined as the ability of given investment to earn a return from its use. Profit is the primary objective of a business.

The word profitability is composed of two words profit and ability. The word profit means as an absolute measure of earning capacity and it is defined by Iyer (1995) as excess of return over outlay but the meaning of profit differs according to the use and purpose of the enterprise to earn the profits.

Thus the word profitability may be defined as the ability of given investment to earn a return from its use.

Profitability performs a dynamic role in determining the business success of a firm. Profitability is the amount of money a firm can engender with whatever resources the firm has. The eventual goal for any organization is maximizing its profitability. Consequently, firms can reap out the benefits associated with the increased profitability. (Aloy Niresh.J. et.al, 2014).

Profitability plays an important role in the structure and development of firm because it measures the performance and success of a firm. It also enhances the reputation of a firm. Maximizing the profits of firm is one of the main objectives of managers. Profitability is vitally important to corporate performance, especially in competition environments. The profitability of a firm is thus a key concern, as is the ability to better with stand negative shocks and contribute to the stability of the system. It also maximizes stakeholder value and investor value (Nousheen, T. 2013).

Manufacturing sector plays a vital role in the development of any country. The manufacturing sector in Ethiopia has expanded very noticeably during the past decade. The World Bank reported a growth rate of 12.3% in the sector as far back as the year 2009. Aggressive efforts to draw investment from both outside and inside have these days pushed investment activities in the sector to an uncharted territory in the history of the country. Recent international studies have further put Ethiopia among the country poised to become heavy weights of international manufacturing (Bereket Gebru, 2013).

According to Central Statistical Agency of Ethiopia (2012) manufacturing industry in Ethiopia is a wealth-creating sector of the economy and came into being with the occurrence of technological and socio-economic transformations. The number of manufacturing industries and their support to the national economy in terms of increasing GDP, providing important material support for national infrastructure and

reducing unemployment (which also shows an increasing trend of payment of wages and salaries) is increasing over time. The industry also contributes to the economy through paying government taxes. More than 31% of the manufacturing industries fell in the category of food products and beverages. Manufacturing sectors by its nature also creates chain between raw material producer and wholesalers, retailers and consumers by processing those raw materials. From this, wheat flour manufacturing firm is a good example, which uses raw wheat as an input and produces wheat flour for biscuit, pasta and macaroni factories and also provide wheat flour to wholesalers, retailers and consumers.

The firm's ability to generate profits is so called Profitability measure and it is also the central investment to security analysis, shareholders, and investors. Profitability is the primary measure of the overall success of enterprise. In addition to this, the analysis of profitability is important for the Shareholders, creditors, prospective investors, manufacturers and government alike.

Therefore, profitability requires empirical investigation so as to sort out what are the important factors affecting profitability of manufacturing companies so that concerned bodies will focus on relevant factors affecting profitability. Hence the determinants of profitability on manufacturing companies have become important and an investigation focuses area on what factors determine the profitability.

## **1.2 Statement of the problem**

According to Schmalensee (1989), Firms are heterogeneous in their profit performance and those differences in productivity help to explain differences in profitability. The variation of profit among manufacturing companies over the years in a given area would result to suggest that different factors play a crucial role in influencing their profitability. It is therefore imperative to identify what are these factors as it can help manufacturing companies to take action on what will increase their profitability and investors to forecast the profitability of these manufacturing companies. So, factors affecting firm's profitability deserve special attention (Akbase & Karaduman, 2012) and Profitability is the major principle of most corporate entities; hence it's relative importance in the analysis of corporate growth and survival.

The studies that have been conducted at international level on determinant factors of profitability performance are highly concerned with financial intermediaries and insurances than manufacturing and merchandises. For instance (Chen-ying lee, 2014), (Indranarain, R., 2009), (Bashir, A., 2004), (Sara, K., 2013), (Molyneux et al, 1992) are among many others. Even though empirical studies have been giving much concern for financial institution, there are also studies conducted on the determinant factors of profitability in manufacturing business on global level like (N. Sivathaasan et al., 2013), (Dharmendra S., 2012), (Stierwald, 2009), (Nousheen et al., 2012), (Saliha, T. et al., 2011), (Camelia B.,2011).

Studies at a global level that were conducted on manufacturing firms have revealed that company specific as well as industry and macroeconomic factors determine profitability of manufacturing companies. For instance, (Nousheen et al., 2012), found that there is a significant positive relationship between profitability and size. But tangibility and growth has positive but insignificant relationship with profitability and debt to equity has negative and insignificant impact on profitability. (Dharmendra S., 2012) found that Debt-Equity Ratio, Inventory Turnover Ratio, and Size were the most important determinants of the profitability which affected the profitability of the companies under the study positively. Only Liquidity was found to have negative effect on the profitability. Based on (Saliha, T. et al, 2011) asset of the business is a significant determinant factor of profitability performance. According to Camelia B, (2011), there was positive relationship between ROA and efficiency of capitals. According to Doma, R, M. et al (2014) GDP has an impact on profitability of the companies. Stiewarld (2009) concluded that firm level variables, such as lagged profit, productivity level and size, have a positive and large impact on firm profitability.

Extensive studies that were conducted at a continental level on determinant factors of profitably are mainly on financial intermediaries and insurance companies. For instance (Munyambonera, E., 2013), (Naceur, S.B., 2003), (Francis, M. E., 2011), (Flamini, V., 2009), (Aburime, T. U., 2008) and inadequate attention has been given by studies to assess determinant factors of profitability of manufacturing businesses.

The empirical studies conducted at continental level have found that internal factors as well as external factors determine profitability of manufacturing companies. For example, Okwo et al (2012) on the study of examination of the factors which determine the profitability of the Nigerian beer brewery firms revealed that operating expenses and credit functions are the significant determinant factors of profitability for the firms. Babalola, Yisau Abiodun (2013) on the study of the effect of firm size on firms' profitability in Nigeria founded that size in terms of sales and total asset is a determinant factor of profitability performance of manufacturing companies in Nigeria.

In Ethiopia, previously conducted empirical studies on financial institution have repeatedly raised age of company, size of company in terms of log of total asset, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets as a determinants factor of profitability (Amdemichael,2012, Feysa,2013). However the results of the empirical result are also inconsistency (A.K Dawood 2011). In our case, not only measuring the financial performance of manufacturing companies, but also clear insight about macroeconomic factors affecting financial performance in the industry is the problem to be investigated. In Ethiopia there is also paper conducted regarding determinants of profitability on manufacturing companies. Mesfin (2014) conducted his research on determinants of profitability on selected manufacturing firms, in case of Assela Town. The prescribed researcher try to determine firms profitability by using firm specific factors (tangibility, age of the company, capital efficiency, liquidity, size of the firm, growth opportunity, leverage) and found out that capital efficiency, growth and liquidity have significant impact on the profitability of manufacturing company. But the researcher was not use the effect of external determinant factors on profitability of manufacturing's of Assela Town.

The most important reasons to perform this study are: first, the incidence of few empirical studies both on international level and very importantly on national level on determinants factors of profitability performance of manufacturing firms, which comprises both internal and external determinant factors, particularly for wheat flour manufacturing. Second, the unstable nature of profitability demands regular investigation of its determinant factors. Third, given the important contributions of the wheat flour companies to the economy, it is reasonably necessary to examine the

determinant factors which are affecting the profitability performance of wheat flour factories in the Adama City in order for them to be more profitable.

The wheat flour manufacturers in Adama in relation to performance in general and profitability in particular along with the gap in the literature with respect to profitability and the link between profitability and internal and external determinant factors call for detailed investigation. Furthermore, in order to minimize the above stated problems identifying the factors that affect manufacturing profitability is critical.

Among different factors that can have impact on the profitability of firms; age, operating cost efficiency, tangibility, capital efficiency, firm size, liquidity, growth, food inflation and real GDP growth rate have been considered for analysis in this study as determinants of corporate profitability.

Therefore, the study seeks to provide relevant empirical information about the internal and external factors that affects profitability by examining these variables in relation to wheat flour manufacturing firms operated in the Adama City, those have eight years data.

### **1.3 Objectives of the study**

#### **1.3.1 General Objective**

The main objective of this study is to investigate the determinants of profitability performance of wheat flour manufacturing companies for the period of 2007-2014 G.C in Adama City.

#### **1.3.2 Specific Objectives**

Based on the above general objective, the specific objectives of the study were as follows:

- To examine the effect of firm-specific (internal) i.e. age, operating cost efficiency, tangibility, capital efficiency, firm size, growth and liquidity on profitability of wheat flour manufacturing firms of Adama City.
- To investigate the effects of external (macroeconomic) i.e. real GDP growth rate and food inflation rate on profitability of wheat flour manufacturing firms of Adama City.

## **1.4 Literature driven hypothesis**

As already shown previously, in the context of the problems highlighted, the broad objective of this research is to examine determinants of profitability performance of wheat flour manufacturing firms of Adama City. In line with the broad purpose statement, nine hypotheses were formulated for examination purpose. Hence, subsection 1.4.1 presents the dependent variable as proxy for wheat flour manufacturing firms. Then the independent variables that are selected and categorized into firm-specific and macroeconomic determinants of manufacturing profitability are presented in subsection 1.4.2.

### **1.4.1. Dependent Variable (ROA)**

Recent literature analyzes the profitability of companies from various countries and economy sectors through indicators like net operating profitability (NOP) (Raheman et al., 2010), (Dong and Su., 2010), return on total assets (ROTA) (Deloof, 2003), (Padachi, 2006), return on invested capital (ROIC), return on assets (ROA) (Narware, 2010). In these cases, the elements considered by profitability analysis as independent variables are financial indicators that express the working capital. For the evaluation of profitability, Return on total assets (ROA) was used as a dependent variable. It is considered that it includes all the influences of the assets' management and it is acknowledged as a key indicator of increasing company performance; it also defines their economic growth potential (Helfert, 2002).

The Return on Assets (ROA) indicator expresses the company's ability to generate profit as a consequence of the productive use of resources and of the efficient management, and it's used as a dependent variable in the assessment of economic performance. It is computed as a ratio between Net Income and Total Assets (Burja, 2010).

### **1.4.2. Independent Variables**

This subsection describes the independent variables that are used in the econometric model to estimate the dependent variable. Following prior researches towards the determinants of manufacturing's profitability, the independent variables are classified into firm-specific and macroeconomic variables.

## **Internal factors (firm specific variables)**

Internal factors are factors that the firm managers have control. That is, internal factors are those that are often influenced by policies and decisions of a firm's management. The internal factors basically reflect differences related to policies and decisions of a firm's management with regard to sources and uses of capital, liquidity and expense management. Thus, the impact of internal factors on manufacturing profitability can be analyzed by looking at the balance sheet and income statement of the concerned wheat flour manufacturer. Within the context of the internal factors, up on which firm's management has control, the immediate factors that would have an impact on firm profitability are those factors that affect a firm's net interest income. The internal factors include log of total asset, tangibility, age, capital efficiency, liquidity, firm size and operating costs.

### **Firm size (SZ)**

If the size of the firm increases, the profitability also increases. (J.D Akhevein, 1997), (M. Smirlock, 1985). We measure size (SZ) of the firm by the taking the natural log of the sales as this measure smoothenes the variation in the figure over the periods of time. Large size of firms tends to be more profitable. Thus we expect a positive relationship between size and profitability of firm.

- **Ho:** *There is no positive and significant relationship between the size of firms and the firm's profitability.*
- **H1:** *There is a significant positive relationship between the size of firms and the firm's profitability.*

### **Log of total asset (Growth)**

Better growing firms increase their profitability. If there is an increase in total assets it means it has high growth and it tends to be more profitable (J. Abor, 2005). We measure growth (GT) as a percentage increase in total assets. Thus we expect positive relationship between growth rate and profitability of firm.

- **Ho:** *There is no positive and significant relationship between the Growth and the firm's profitability.*
- **H1:** *There is a significant positive relationship between the Growth and the firm's profitability.*

### **Tangibility of asset (TG)**

A firm with large amount of fixed asset tends to be more profitable because of increasing its future assets value. On the other hand it is a Fixed Assets Ratio that will expresses the share of the assets that the company disposes of permanently for its activities and indicates the level of capital investment in the technical and productive infrastructure. Thus we expect a negative relationship between tangibility of assets and profitability (A. Shan and S. Khan, 2007). We measure tangibility of asset (TG) as a ratio of fixed assets divided by total assets. We take total net amount of fixed assets as the numerator. Using total net amount of fixed assets means the cost of fixed assets minus accumulated depreciation.(Camelia B., 2011)

- **Ho:** *There is no negative and significant relationship between the tangibility of a firm and the firm's profitability.*
- **H1:** *There is a significant negative relationship between the tangibility of a firm and the firm's profitability.*

### **Age (AGE)**

From different studies, the effect of operating age on profitability performance is inconsistent. Some Researchers (Majudmdar, 1997); (Mesut, D., 2013) have proved the existence of a significant negative relationship between age and profitability. (Stierwald, A., 2009) concluded a non significant relationship between age and profitability. Robson and Benneti (2000) support that older firms have reached a reasonably secure position in the markets in which they compete, having long ago surpassed the minimum efficient scales of production. The study had expected a positive statistically significant relationship between age and profitability performance due to the reason that the growth in age has an influence on profits because of the cumulative practice of the firm and the generation of a purchasing and negotiating power.

- **H<sub>0</sub>:** *There is no positive and significant relationship between the age of a firm and the firm's profitability.*
- **H<sub>1</sub>:** *There is a significant positive relationship between the age of a firm and the firm's profitability.*

### **Capital efficiency (CAPEF)**

Sales to equity ratio shows how well were used the own capitals for generating sales.

In dynamic, an increasing of this indicator, generally suggests a positive aspect that reveals a better management of own capitals used in activity and a raise of their efficiency (Camelia B., 2011).

$$\text{Sales to Equity Ratio} = \text{Net Sales} / \text{Total shareholders' equity}$$

- **H<sub>0</sub>:** *There is no positive and significant relationship between the capital efficiency of a firm and the firm's profitability.*
- **H<sub>1</sub>:** *There is a significant positive relationship between the capital efficiency of a firm and the firm's profitability.*

### **Operation cost Efficiency (OPEF)**

The indicators Expenses Revenue Ratio (ERR) connects expenses with revenue, and expresses the efficiency achieved by a company through minimize its costs. In dynamic, a decrease of this ratio indicates an improvement in resources management and economic performance increasing (Camelia B., 2011).

$$\text{Expenses Revenue Ratio} = \text{operating cost} / \text{Operating Income}$$

- **H<sub>0</sub>:** *There is no negative and significant relationship between the operating cost efficiency of a firm and the firm's profitability.*
- **H<sub>1</sub>:** *There is a significant negative relationship between the operating cost efficiency of a firm and the firm's profitability.*

## **Liquidity (LIQ)**

According to ki chi phan (2013), Liquidity management has been very important in every firm. The management of the company is required to manage not only the fixed capital but working capital also. The management of the working capital is significant to maintain liquidity in the enterprise. To get an idea about liquidity of various firms, current ratio of each firm is compared with one another. On one hand, the firm having higher current ratio is considered to be having better liquidity position while on the other it also indicates poor credit management and thus indicates loose or liberal management practices. The firm having lower current ratio is considered to be having inadequate margin of safety and thus poor liquidity.

- **H<sub>0</sub>:** *There is no negative and significant relationship between liquidity and firm's profitability.*
- **H<sub>1</sub>:** *There is a significant negative relationship between liquidity and firm's profitability.*

## **External factors (macroeconomic variables)**

External factors are those that are related to macroeconomic scenarios that reflect the economic and legal environment within which the flour manufacturing companies operate. To this effect, external factors are those factors that are beyond the control of the management of a firm.

With the context of external factors, which are beyond the control of a firm's management, the environment within which a manufacturing company operates has an impact on the profitability of the firm. To this effect, the external factors can be analyzed by examining the overall economic scenario within which a firm operates.

## **Real GDP Growth Rate (RGGR)**

GDP is one of the primary macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country's borders over a particular time, usually a year. Since economic growth and manufacturing sector performance are positively correlated, the real GDP growth, used in this study, is expected to have a positive impact on firms's profitability (D.Kunt and Huinza, 2000).

- **H<sub>0</sub>:** *There is a no positive and significant relationship between real GDP growth rate and firm's profitability.*
- **H<sub>1</sub>:** *There is a significant positive relationship between real GDP growth rate and firm's profitability.*

## **Food Inflation Rate (INFR)**

It also serves as macroeconomic variable. An increase in food inflation will tend to increase in price of food sector and high prices generate high profit. Inflation is positively related to profitability (P. Molyneux and J. Thornton, 1992). So we expect a positive relationship between food inflation and profitability.

- **H<sub>0</sub>:** *There is a no positive and significant relationship between food inflation and firm's profitability.*
- **H<sub>1</sub>:** *There is a significant positive relationship between food inflation and firm's profitability.*

The following table 1.1 presents the summary of hypothesized expected sign for the relationship between the explanatory variables (independent variables) and manufacturing's profitability (dependent variable).

| Variables                      | Measures                               | Notations | Expected signs |
|--------------------------------|----------------------------------------|-----------|----------------|
| <b>Dependent variable</b>      |                                        |           |                |
| Profitability                  | Net profit after tax/total asset ratio | ROA       | N/A            |
| <b>Independent variable</b>    |                                        |           |                |
| <b>Firm specific variables</b> |                                        |           |                |
| Firm size                      | Log of the sales                       | SZ        | +              |
| Growth                         | Log of total asset                     | GT        | +              |
| Tangibility                    | Net fixed asset/total asset            | TG        | -              |
| Capital efficiency             | Net Sales/Total shareholders' equity   | CAPEF     | +              |
| Age                            | Operational age of the firm            | AGE       | +              |
| Operating cost efficiency      | operating cost/Operating Income        | OPER      | -              |
| Liquidity                      | Current ratio                          | LIQ       | -              |
| <b>Macroeconomic variables</b> |                                        |           |                |
| Real GDP Growth rate           | Real GDP Growth rate (%)               | RGGR      | +              |
| Food inflation                 | The Annual Food inflation rate         | INFR      | +              |

## 1.5 Significance of the Study

Understanding how wheat flour manufacturing's are efficiently operating and identifying the key factors that determine the firms' profitability is valuable to the various claimants of the manufacturing industry. The significance of this research includes the following:

- First, as it is explained in the review of the literature part studies made so far in Ethiopia with the objective of identifying the determinants of manufacturing profitability are very insufficient. As a result, this study makes a number of

contributions towards extended research in the area of determinants of profitability of wheat flour manufacturing firms in Adama City.

- Second, the study draws some conclusions and identifies the determinants of manufacturing firm profitability significantly. Thus, it gives signal to the management of the wheat flour manufacturing firms and policy makers to take remedial action.
- Third, it helps other researchers as a source of reference and as a stepping-stone for those who want to make further study on the area afterwards.
- Finally, it gives all stakeholders in the area the opportunity to gain deep knowledge about the relationship of internal and external determinants and profitability.

## **1.6 Scope of the study**

The scope of the study is restricted to the internal i.e. age, operating cost efficiency, tangibility, capital efficiency, firm size, liquidity and log of total asset and macroeconomic factor food inflation and real GDP growth rate, determinants that determine profitability of wheat flour manufacturing firms those have eight years data i.e., 2007-2014 G.C. Namely, Family Flour Factory plc, Yisalemush Tekle Flour Factory plc, Awofat Flour Factory plc, Yerer Flour Sh.co. and Bolo Flour Factory plc. In addition to this, food complexes were not considered. Therefore, the study does not reflect the overall picture of profitability of the food complexes in Adama City, rather it only concerns on wheat flour manufacturing firms operating in Adama City.

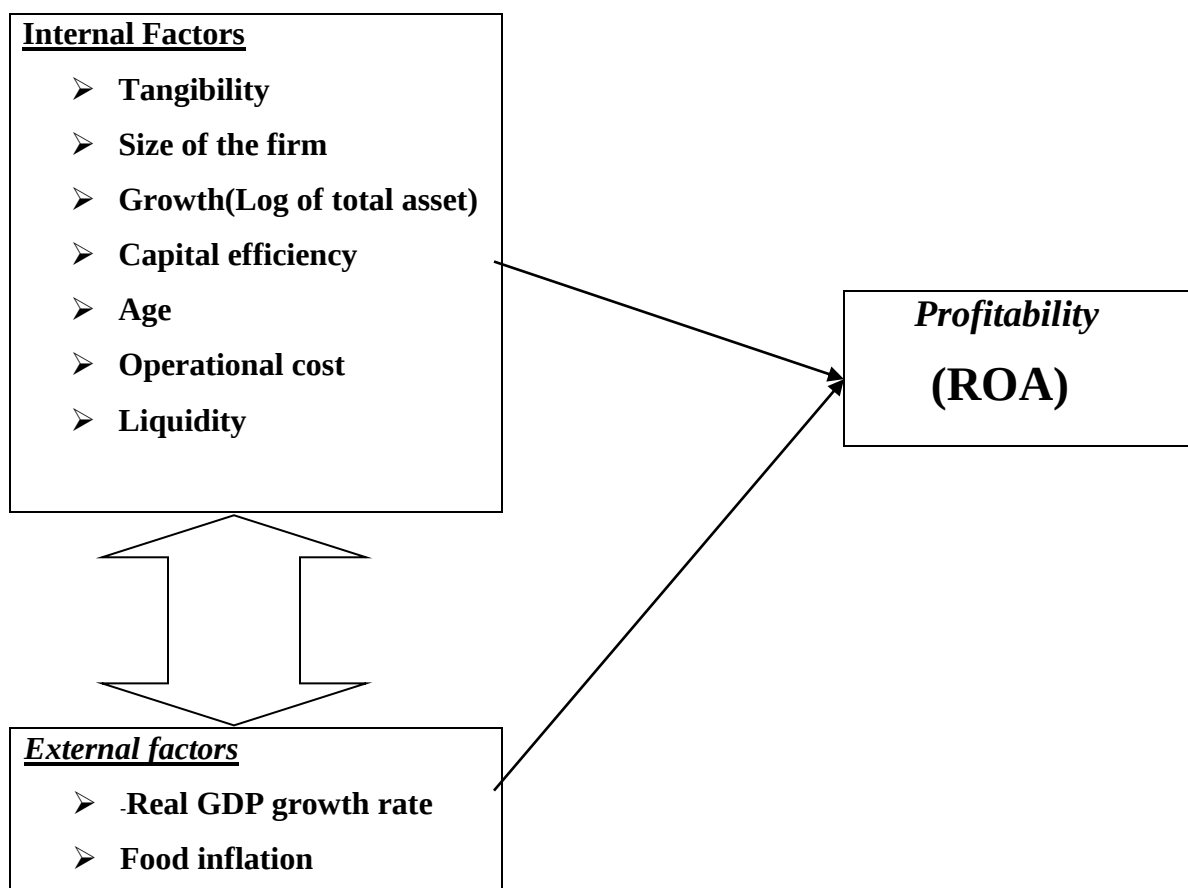
## **1.7 Limitation of the study**

Since this study was based on quantitative data, there are other explanatory qualitative variables which were not modeled in the study because of their qualitative nature. Therefore the econometrics model used in the study was not include qualitative and industry specific variable data. Moreover, lack of relevant and up to date published literatures mainly in the context of Ethiopia and the difficulty of getting raw data as well as absence of full information displayed on websites were the major constraints during the study. However, the researcher tried his best to design the research as properly as possible.

## 1.8 Conceptual Framework

This conceptual frame work describes the relationship between profitability and firm-specific as well as macroeconomic variables based on the theoretical and empirical perspective and the empirical results are described from the following diagram.

*Figure 1.1: Relationship between profitability and its determinants*



### **1.9. Organization of the Paper**

The paper consists of five chapters with different sections and sub-sections and it were structured as follows. Chapter one presents the introduction for the main part of the paper. Chapter two reviews the most significant theoretical and empirical studies. Chapter three presents the research design and methodology. Chapter four also provide the interpretation and analysis of econometric model outcomes. Chapter five as usual gives conclusion and recommendation with policy implication and further research direction.

## **Chapter Two**

### **Related Literature Review**

This section of the study provides theoretical literatures, empirical literatures, from global and Ethiopian view. Also it present the research gap on the determinant factors of profitability performance of beer companies by referring the findings of earlier related researches.

#### **2.1. Theoretical review**

##### **2.1.1 Overview of profitability and performance**

N.Sivathaasan et. al., 2013, Profitability has been given considerable importance in the finance and accounting literatures. (Hifza Malik, 2011), Profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth, and, profitability is very important determinant of performance. The variation of profit among manufacturing companies over the years in a given country would result to suggest that internal factors or firm specific and external factors or macroeconomic factors play a crucial role in influencing their profitability. It is therefore imperative to identify what are these factors as it can help manufacturing companies to take action on what will increase their profitability and investors to forecast the profitability of manufacturing companies. To do so, it is better to see what factors were considered in previous times by different individuals.

Hermanson (1989) also defines profitability as the organizations' ability to generate income and its inability to generate income is a loss. He further declares that if the income generated is greater than the input cost, that is simply profitability but if the incomes are less than the input cost, it reflects poor performance.

Surprisingly, the theoretical relationship between firm growth and profitability is unclear and has not been the subject of uniformity in empirical research (Coad & Hölzl, 2010). According to Friedman (1953), the relationship between profitability and growth is explained by theoretical models which approve the above mentioned concept of conformity in investment budgets. Profitable firms will be more motivated to grow,

because they will not only have the financial means to expand, but their ongoing profit creation will also make it possible to sustain growth (Nelson & Winter, 1982).

Goddard, Molyneux & Wilson (2004) are of the opinion that the theoretical belief of firm performance and growth is not observed in reality. According to their findings, firm profitability and growth are not necessarily linked to each other. Additionally, some recent studies confirm the concerns of Goddard and his co-writers (Coad, 2007). The main concerns are as follows:

- ❖ The impact and direction of the relationship between growth and profitability are ambiguous.
- ❖ It is difficult to control the endogenous effect of a lag term on growth in a simple autoregressive model.
- ❖ The most commonly used panel unit-root test in previous studies cannot directly examine the inter-relationship between firm growth and profitability (Davidsson, Steffens & Fitzsimmons, 2009).

Performance evaluation is the cumulative consideration of factors that may be representative indicators or appraisal of an individual or entity's activity, or performance in reference to some standards over a period of time. It considers the degree of goal attainment, how items are measured, and what standards are to be applied. (Farlex , 2010) defines Performance evaluation as the assessment of a manager's results, which involves, first, determining whether the money manager added value by out-performing the established benchmark (performance measurement) and second, determining how the money manager achieved the calculated return. Performance evaluation is carried out through two major measures: Financial measures and non-financial measures. Hansen and (Mowen, 1999) opine that financial measures focus mainly on figures which may not tell the whole story of the company. Nevertheless, financial measures are commonly used to evaluate performance. The most commonly used financial measure for performance evaluation is profitability measures. This is because most business concerns function to earn enough profit in order to remain as a going business concern. To determine firm's profitability, one of the most frequently used tools is financial ratio analyses which include profitability ratios. Profitability ratios show firm's overall

efficiency and measure both the profit margin that the firm is able to generate as well as the return it provides on the physical facilities and fund it employs.

According to Horngren, Datar and Foster (2006), many organizations are increasingly presenting financial and non-financial performance measures for their subunits in a single report called Balanced Scorecard. Different organizations stress different measures in their scorecards, but the measures are always derived from a company's strategy. The balanced scorecard focuses on both financial and non-financial measures of performance. The balanced scorecard measures an organization's performance from four perspectives. i.e., Financial Perspective, Customer perspective, Internal-business-process perspective, Learning and growth perspective.

### **2.1.2 Theories of profitability**

There is no commonly specified theory of profitability that provides an outline for the study of financial performance determinant of the manufacturing. Because of this fact, the study tries to view some theories which are nearer to the concept determinants of profitability.

Firm profitability and its determinants are a well addressed research topic in the field of industrial organization. Modern literature provides two schools of competing models of firm profitability.

#### **2.1.2.1 The structure-conduct-performance (SCP) Model**

The structure-conduct-performance (SCP) model postulates that the degree of concentration in an industry determines firm behavior and profitability. A higher concentration enables collusion between firms which can lead to higher profits. The SCP was the central opinion of the Harvard school of thought and popularized during 1940-60 with its empirical work involving the identification of correlations between industry structure and profitability. Most early research explanation for the relationship between the market concentration and profitability based on the structure-conduct performance (SCP) hypothesis, and focused on the interpretation of a positive empirical relationship between concentration and profitability (Goddard et al. 2004).

### **2.1.2.2 Firm effect models**

Firm effect models argue that differences in firm-level characteristics, such as efficiency level, organizational structure or quality of management, exist, persist and cause differences in profitability.

The fundamental assumption in firm effect models is that firms are heterogeneous within an industry. Specifically, the superior firm hypothesis, introduced by Demsetz (1973), states that firms can be distinguished with respect to their level of efficiency. More productive firms have a competitive advantage over their less productive rivals which is likely to be reflected in profitability. Firms with higher levels of total factor productivity earn higher profits. The superior firm hypothesis establishes a positive relationship between productivity and profitability at the firm level. Taking these arguments further, Jovanovic,(1982) postulates that only efficient firms stay in the market, and that less productive firms will eventually exit the market.

There is an abundance of publications devoted to the analysis of firm profitability. Overall, the evidence suggests that the SCP and firm effect models are plausible. This implies that firm and industry characteristics are important to determine profitability. The role of total factor productivity has, presumably due to measurement difficulties, received very little attention in applied work. The present analysis advances the limited literature in this area.

### **2.1.3 The role and importance of manufacturing sector**

According to E. J Jefferies (1969), it is generally agreed that modern industry is an essential ingredient in the development of the standard of living of a country. But there is less agreement as to whether modern industry is introduced or whether industrial development follows from general social and economic development. However, what is certain is that the two are linked together in some way.

A country in an early stage of development relies on primary production - agriculture, forestry, fisheries and mining - as its largest source of wealth - usually about one-third to one-half of its national income - and an even larger proportion of its work force is engaged in this sector, much of which very often is mere "subsistence farming". At this

stage, manufacturing industry accounts for only a small proportion of the national income - one-tenth to one-seventh. Thus a large percentage rise in manufacturing output produces only a small rise in overall national income, whereas a small percentage improvement in agricultural output will produce the same overall rise.

According to E.J. Jefferies, 1969 the dual role of industry is:

- (a) To provide the goods and services which the agricultural population (as the majority group in the country), as well as town dwellers, will want to buy;
- (b) To train and employ the workers released from the land by the advance of agricultural productivity.

According to Um Juali (2012), Manufacturing is a process involving tools and labor to produce goods for use or sale as intermediaries, or as final products, either domestically or internationally. The term refers to a range of human activity (labor, entrepreneurship and innovation), combined with tools or capital equipment in a production process in which raw or intermediate products are used to produce final (or intermediate) goods.

Manufacturing is a wealth-producing or wealth creating sector in the economy, where the service sector tends to be wealth consuming. Even though the tertiary sector in most economies is currently dominant as a percentage of the economy and employment creation, most of these economies were built from a strong manufacturing base.

According to the 2010 United Nations (UN) data, the US is still the largest manufacturer in the world, with a share of 20.2% of the world's manufacturing, closely followed by China at 18.9%. Japan is third with 11.1% of manufacturing and Germany fourth with 6.4% which is the main base for their per-capita income. The large difference in per-capita incomes of the developed and the developing countries is mainly due to the disparity in the structure of their economies. The developed countries largely have industrial economies while the developing countries are mainly confined to agricultural economies because the variation in capital formation and economic policies they have.

#### **2.1.4. The development of manufacturing in sub Saharan African countries**

Takahiro Fukunishi (2004) suggests that the development of manufacturing in Sub-Saharan African countries has seriously stagnated except in several countries, the share in world paralleling South Asia. If South Africa is excluded, which is an exceptionally industrialized country accounting for about 60% of manufacturing production in SSA, the figure drops to 13%, and well below the average of low income countries. The performance of exports is particularly behind other developing countries. The share of manufacturing exports in total exports in SSA, excluding South Africa, is 21% which is less than half of that in low-income countries. However, this is partly because SSA countries export a large amount of natural resources, which inflates the total exports and reduces the share of manufacturing. Then, comparing the ratio of manufacturing exports to GDP, the average in SSA(6%) is just over half of the average in low-income countries(11%).further, the export ratio based on the manufacturing value added is also smaller in SSA than the ratio in low-income countries. Therefore, it is clear that export performance is particularly poor and one of the sources of stagnation of the manufacturing sector.

SSA has a unique composition in manufacturing exports. In general, labor-intensive goods such as textile, garment and wood products have a substantial share in exports from developing countries, which have relatively abundant labor and scarce capital. In contrast to such trends, textile and garment goods have much lower share in the manufacturing exports from SSA than that of developing countries.

#### **2.1.5 Manufacturing sector in Ethiopia**

As cited by Mesfin (2014) and sourced from (CSA, 2001), in Ethiopia, there are about 130 state-owned and 7,000 private manufacturing industries of all sizes, mainly engaged in the production of food, beverages, tobacco, textile, leather and foot wear, paper, metallic and non-metallic mineral products, cement and chemicals. Ethiopian's industrial policy is based on Agricultural Development Led Industrialization (ADLI) strategy, whose main objective is the gradual structural transformation of the economy

from agricultural to industrial development using the country's human and natural resources

Major manufacturing opportunities offering attractive potential benefits to prospective investors are hereby outlined in the food and beverage, leather and textile, chemical and paper, electrical and electronic, building materials, and non-metallic minerals and metallic industrial sub-sectors. Nearly all of these investment opportunities are based upon the need and/or recourses of the country.

Food and Beverages: Processing and preserving of meat products; integrated production, processing and preserving of fish products; processing and preserving of fruits and vegetables; integrated production and processing of dairy products; manufacture of starch and starch products; processing of animal feed; manufacture of sugar; manufacture of brewery, mineral water, winery, soft drinks etc.

Tannery and Leather Good and Articles: Integrated tanning up to finishing, manufacture of lug gages, handbags, saddler, harness, footwear and garment.

Textile: Preparation and spinning of textile fibers, weaving of textile fabrics, and made up textile articles.

Glass and Ceramics: table ware and sanitary ware, sheet glass, and manufacturing of containers based on raw materials.

Chemicals and Chemical Products: manufacture of basic chemicals based on local raw materials, including PVC granules from ethyl alcohol, formal de Hyde from methanol, manufacture of caustic soda and chlorine based chemicals, carbon black, precipitated calcium carbonate; textile dyes, ball-point ink, and tallow for soap.

Drugs and Pharmaceuticals: manufacture of pharmaceutical, medicinal, chemical and botanical products in the form of tables, capsules, syrups, and injectables.

Paper and Paper Products: pulp from indigenous raw materials, paper and paper products.

Plastic Products: high pressure pipes, pipe fittings, shower hoods, wash basins, insulating fittings, lighting fittings, office and school supplies and fittings for furniture.

Building Materials: manufacture of cement, lime, gypsum, marble, granite, limestone, ceramics, roofing tiles, corrugated sheets, tubes, pipes and fittings.

Electrical and Electronic Products: Manufacture of office, accounting and computing machinery; manufacture of electric motors, generators, transformers, capacitors, resistors, switch gears, electrical fittings and integrated circuit boards; manufacture of radio, television, VCRs, printers, floppy disc drivers, communication and other equipment and apparatus for the domestic and export market.

Metallurgy: manufacture of basic iron and steel; operation of blast furnaces, steel converters, rolling and finishing mills.

Structural Metal Products: manufacture of metal structures, fabricated steel structures, bridges, towers and recycling of metal and non-metal waste and scrap.

Machinery and Equipment: assembly and manufacture of agricultural machinery and equipment, industrial, transport and mining machinery and parts, manufacturing machinery, machine tools and accessories, miscellaneous light engineering products, components and parts.

In Ethiopian context, the share of manufacturing sector to GDP is insignificant. The overall contribution of Ethiopian Industrial Manufacturing to the national GDP is, about 7%, which is seven times less than the share of agriculture and is 12% that of total industry to GDP,( EEA, 2003).

### **2.1.6 Wheat production in Ethiopia**

The developed countries largely have industrial economies while the developing countries are mainly confined to agricultural economies because the variation in capital formation and economic policies they have. But nowadays, the manufacturing sector in Ethiopia has expanded very noticeably during the past decade. The World Bank reported a growth rate of 12.3% in the sector as far back as the year 2009. Even though the sector is growing in a significant manner, still now it is at an infant stage. Flour manufacturing is one of the growing and plays a crucial role in making a chain between raw wheat producers (farmers) and wholesalers, retailers, consumers and for those who adds value

on flours like biscuit factories, pasta factories, macaroni producers and bakeries. Ethiopia is the second largest wheat producer in sub-Saharan Africa, after South Africa. Wheat is among the most important crops in Ethiopia, ranking fourth in total cereals production (16 per cent) next to maize, sorghum and Teff (CSA, 2009). The largest volume of the main season production of wheat originates from Oromia (55 per cent), Amhara (29 per cent) and the Southern Nations, Nationalities, and Peoples Region, SNNPR (9 per cent) (CSA, 2010). From this bale, Arsi and east Shewa comprises 36.7 percent of national wheat production, which is the most nearest zones to Adama City.

## **2.2 Empirical Review on determinants of profitability**

Camelia Burja,(2011), in order to select variables and appropriate performance analysis models he used the financial statements of a company in the Romanian chemical industry, representative for this sector, for the period between 1999 and 2009. The study examined the relationship between return on asset and some selected microeconomic factors. His finding indicates that there is strong dependent relationship between company performance and how the available resources are managed and there was positive relationship between ROA and Among the factors found the efficiency of inventories, debts level, financial leverage, efficiency of capitals. The positive impacts of them show also, some of the action ways in order to improve the performance.

Kim Chi Phan,(2013), investigated profitability proxied by return on equity (ROE) of 40 listed companies in the Consumer Products sector in the Stock Exchange of Thailand from 2008 to 2012. Multiple linear regression analysis was employed to analyze the impacts of independent variables on dependent variable. The results showed that quick ratio and debt to equity ratio have negative impacts while sales growth has positive impact on return on equity.

Dharmendra S. Mistry (2012),examined the relationship between return on capital employed with its selected independent variable. The main objective of this study is to ascertain the determinants of profitability of Indian Automobiles Industry for a period of five years i.e. 2004-05 to 2008-09. The study found that Debt-Equity Ratio, Inventory Turnover Ratio, and Size were the most important determinants of the profitability

which affected the profitability of the companies under the study positively. Only Liquidity was found to have negative effect on the profitability.

Nousheen et. al. (2013), This study explores the impact of firm specific factors on profitability of companies listed in food sector of Karachi stock market in the presence of food inflation by employing multivariate regression analysis in common effect setting for the period of 2002-2006. They used five explanatory variables to measure their effect on profitability of Pakistani food sector. One of their explanatory variables was statistically significant and other four were statistically insignificant related to profitability. Size of firm is an only explanatory variable that has significant relationship with profitability of firms in food sector. Debt to equity ratio, tangibility of assets, growth and food inflation have insignificant relationship with profitability of firms in food sector. According to these findings here we conclude that debt to equity ratio, tangibility of assets, growth and food inflation are unable to explain profitability in food firms. So our first hypothesis confirms there is significant positive relationship in term of size. But tangibility and growth has positive but insignificant relationship with profitability and debt to equity has negative and insignificant impact on profitability. Their second hypothesis is also rejected due to insignificant relationship between profitability and food inflation.

Doma R. M. et al (2014) examined the impact of internal and external determinant factors on profitability of technology companies in Thailand. This study was aimed at investigating the impact of internal factors in terms of assets, capital, debt and liquidity and macroeconomic factors in terms of gross domestic product (GDP) and inflation on profitability. Both ROA and ROE were used as proxies of profitability of Thailand technology industry and the study covers a sample period of 10 years from 2003 to 2012. From 39 technology companies of Thailand that are listed on the Stock Exchange of Thailand for one decade, which is the 10 years from 2003 to 2012, thirty were chosen as sample units. Multiple regression analysis employed to examine the impact of independent variables on profitability measures. The study results have shown that GDP has a positive significant impact on ROA, both GDP and inflation has no impact on ROE. Similarly inflation and asset have no impact on profitability measured in terms of ROA.

Sivathaasan N. et al.(2013) explore whether factors such as capital structure, working capital, firm size, non-debt tax shield and growth rate, determining profitability have any impact on profitability of selected manufacturing companies listed on Colombo stock exchange, Sri Lanka over a period of five years from 2008 to 2012. They investigated relationship between profitability, proxies in ROA and ROE, and other independent variable. Based on the regression analysis, the capital structure and non-debt tax shield have statistically significant and positive impact on profitability. Though other variables such as working capital and firm size have shown positive relationship, they are not significant at 5 % levels. Moreover, the growth rate has shown the negative insignificant relationship on the profitability.

Aloy Nireesh J. et al.(2014), investigate the effects of firm size on profitability of quoted manufacturing firms in Sri Lanka. In this study, data of 15 companies which were active in Colombo Stock Exchange between the years 2008 to 2012 has been used. As indicators of firm profitability, Return on Assets and Net Profit have been used whereas Total Assets and Total Sales have been utilized as indicators of firm size. Correlation and regression methods have been used in the empirical analysis. There is no indicative relationship between firm size and profitability of listed manufacturing firms, the findings reveal. In addition, the results showed that firm size has no profound impact on profitability of the listed manufacturing firms in Sri Lanka.

Okwo I. et al (2012) have carried out a research on examination of the factors that determine the profitability of the Nigerian beer brewery firms. And the study examined the internal factors that determine the profitability via applying OLS in the form of multiple regressions to annual data generated from the annual statements and accounts of the sampled beer brewery firms covering a period of 2000 to 2011. The study results identified the ratios of inventory to cost of goods sold (level of inventory), account receivables to sales (credit function) and sales and general administrative expenses to sales (operating expense) have positive and statistically significant impact on gross profit margin (profitability performance measure) and concluded that the identified independent variables are the internal factors that determine the profitability of beer brewery firms in Nigeria.

Agu Sylvia Uchenna et al.(2013) examines the internal factors that determine the profitability of the beer brewery firms in Nigeria. An OLS in the form of multiple regressions were applied to annual data generated from the annual statements and accounts of the sampled beer brewery firms covering a period of 2000 to 2011. The study investigates the relationship between profitability, in terms of gross margin, and independent factors. The correlation and regression results identified the ratios of inventory to cost of goods sold; account receivables to sales; and sales and general administrative expenses to sales to have statistically significant impact on gross profit margin. The paper concludes that the above identified independent variables are the internal factors that determine the profitability of beer brewery firms in Nigeria.

Andreas Stierwald (2009) investigates the determinants of firm profitability, Using data for 961 large Australian firms for the period 1995-2005, the study applies random and fixed effect regression and corrects for dynamic panel bias. The profit model includes, among other variables, a time-variant, firm-level measure for total factor productivity obtained from auxiliary cost function estimation. The analysis reveals that firm level variables, such as lagged profit, productivity level and size, have a positive and large impact on firm profitability.

Aspasia Vlachvei et al.(2008),examines the impact of firm level variables on the growth of firms operating in Greece. Using models of optimal firm size as a theoretical framework, the paper analyzes empirically the factors affecting the growth of Greek firms. The study is based on financial data of 178 manufacturing and trading firms, which are present in Greek Stock Market. The financial data set covers the period 1995-2000. In the estimation of growth rate they control for various factors characterizing the sample firms, their capital structure and performance. Our results show that the relationship between growth, size and the age of firms is very sensitive with respect to the methods of estimation and growth and size definitions.

According to Pratheepan T. (2014), a balanced panel data set of Sri Lankan listed manufacturing companies was used for examining the determinants of profitability of manufacturing companies using the static panel models. 550 observations of 55 listed manufacturing companies over the period of 2003 – 2012 were included. Return on assets considered as a measure for profitability is a dependent variable whereas size, leverage, liquidity and tangibility are considered as independent variables. According to

the findings, size is statistically significant of positive relationship with profitability whereas tangibility shows statistically significant of inverse relationship with profitability for selected listed manufacturing companies in Sri Lanka. Leverage and liquidity indicate insignificant impacts on profitability.

Babalola, Y. A. (2013) studied the effect of firm size on firm's profitability in Nigeria. The main purpose of this paper was to provide empirical evidence on the relationship between firm size and profitability of quoted manufacturing firms in Nigeria Stock Exchange. This study employed panel data framework to allow for differences in the form of unobserved individual firms effect. Secondary data were used for this study. The data were sourced from the Annual reports and accounts of the random sample of 80 non-financial quoted firms listed on the Nigeria Stock Exchange for the period 2000-2009. Profitability was measured by using Return on Assets, while both total assets and total sales were used as the proxies of firm size. According to the results of the study, firm size, both in terms of total assets and in terms of total sales, has a positive impact on the profitability of manufacturing companies in Nigeria.

According to Perry (1992), the relationship between inflation and bank profitability depends on the nature of inflation (whether the inflation is anticipated or unanticipated). If the inflation is anticipated type, the revenues of banks will increase faster than costs of banks because banks will be able to timely adjust interest rates. Thus, this type of inflation will have a positive impact on the profitability of banks Service charge and commission income and other incomes. On the other hand, if the type of inflation is unanticipated one, bank costs will increase at faster rates than bank revenues because banks may not be fast in timely adjusting their interest rates. In such a case, inflation will have a negative impact on bank profitability. Thus, the expected sign of inflation on bank profitability is subject to empirical investigation.

Mesfin D.(2014) investigate the determinants of profitability of manufacturing company in Assela town. Specific objectives were to determine and evaluate the effects of company-specific factors expressed within the Age, Size, Tangibility, Liquidity, Leverage, Growth and capital adequacy. Balanced panel data of twenty four observations from 2008 to 2013 of four large manufacturing companies was analyzed using multiple linear regressions method. In relation to ROA, capital adequacy, growth

and liquidity have significant impact on the profitability of manufacturing company. All explanatory variables have a positive relationship with return on asset in agreement with the hypothesis and also tangibility and leverage have negative relationship with return on asset in agreement with the hypothesis. The explanatory variables included in this study jointly explain about 86 percent of the variation in return on asset.

Based on the above reviewed literatures it is clear that the studies on the determinant factors of profitability performance have generated varied results ranging from those supporting a positive relationship among the variables used in the study to those opposing it. There is no common agreement or consistency on how both internal and external factors are related to firm profitability. Hence, the results are inconclusive and require more empirical work. In this way, the current study has been initiated to investigate the effects of determinant factors on profitability of the listed wheat flour manufacturing firms in Adama.

### **2.3 Research gap**

As to the knowledge of researcher in relation with this topic area, i.e. determinants of profitability performance of wheat flour manufacturing in Adama City, there is no prior studies prepared in Adama City. But the researcher investigated that various studies that was conducted in Ethiopia which are indirectly related with the proposed study.

In the context of Ethiopia, the related study conducted by (Mesfin, 2014) mainly determine the profitability of manufacturing companies operating in Assela Town, even if it tries to identify the impact some firm-specific variables. In relation to ROA, the researcher found that capital adequacy, growth and liquidity have significant impact on the profitability of manufacturing company. All explanatory variables have a positive relationship with return on asset in agreement with the hypothesis and also tangibility and leverage have negative relationship with return on asset in agreement with the hypothesis.

In general, the lack of sufficient research on the determinants of profitability performance of wheat flour manufacturings in Adama City and the existence of knowledge gap in the area initiate this study. Therefore, the objective of this research is to investigate the determinants that determine the profitability performance of wheat flour manufacturing firms of Adama City and to fill the knowledge gap that exists in the area by adopting quantitative research method.

## **Chapter Three**

### **Research Methodology**

The purpose of this chapter is to present, the underlying principles of research methodology, the choice of the appropriate research method for the thesis and the hypotheses. The chapter is organized as follows. The first section 3.1 discusses the research approach while 3.2 presents the method adopted in the study and section 3.3 presents the research hypotheses and objective and finally 3.4. is the data analysis.

#### **3.1. Research Design**

The study is used explanatory research design. The study was to explain the relation between profitability and its' determinants based on the result that found by regression.

Research designs are plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell 2009, p. 3). Therefore, in order to achieve the objective stated in the preceding section, considering the nature of the problem and the research perspective this study used quantitative research approach. The chief advantage of this approach is that numbers are easy to work with, data are readily collected, coded, summarized and analyzed (Dunn, 1999). Further quantitative research approach has the advantage of being able to make generalizations, for a broader population, based on findings from the sample. Accordingly, the quantitative method was used to investigate determinants of profitability of wheat flour manufacturing firms in Adama City, and the financial data were collected through structured survey of documents.

#### **3.2. Methods adopted**

##### **Sample design and sample size**

The populations of the study are wheat flour manufacturing companies operating in Adama City which are 13 in number. All of these companies are preparing financial statement. As the sample of the companies to be included in the study are needed to be

more than 8 years of operations, the paper is based on purposive sampling approach, that it improves representativeness of the sample, and use 5 companies in the study, which is 38.5% of the whole population. The research was conducted based on eight years financial statements collected from 5 companies. The selection of sample size is based on the operational age of the firms.

### **Sources of data**

The analyses is basically concentrated on the data available in financial statements of firms for the purpose of analyzing internal factors (microeconomic factor) and data from Ministry of Finance and Economic Development (MOFED) and central statistic authority (CSA) for the analysis of macroeconomic factors like real GDP Growth rate and food inflation covering the period of 2007-2014.

### **3.3. Data Processing and Analysis Technique**

The collected data was regressed by panel data fixed effect regression method and interpret with the help of different ratio and statistical description including standard deviation, average, minimum, maximum and median (descriptive statistics) and multiple regression (significant test). As noted in (Baltagi, 2005) the advantage of using panel data is that it controls for individual heterogeneity, less co-linearity among variables and tracks trends in the data something which simple time-series and cross-sectional data cannot provide.

A multiple linear regression model and t-static was used to determine the relative importance of each independent variable determine profitability. The multiple linear regressions model was run, and thus OLS was conducted using Eviews 6 econometric software package, to test the casual relationship between the firm's profitability and their potential determinants and to determine the most significant and influential explanatory variables to determine the profitability of wheat flour manufacturing firms. The rational for choosing OLS is as noted in (Petra, 2007) OLS out performs the other estimators when the following holds; the cross section is small and the time dimension is

short. Therefore, as far as both the above facts hold true in this study it is rational to use OLS.

In order to calculate the value of the firm-specific determinants the researcher was used ratio analysis. By taking the value of each firm specific variables from the financial reports of each firm and compute the ratio analysis. Regarding the macroeconomic determinants for each period, the researcher was directly used that gotten from the source.

As noted in Brooks (2008) there are basic assumptions required to show that the estimation technique, OLS, had a number of desirable properties, and also so that hypothesis tests regarding the coefficient estimates could validly be conducted. If these Classical Linear Regression Model (CLRM) assumptions hold, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators. Therefore, for the purpose of this study, diagnostic tests are performed to ensure whether the assumptions of the CLRM are violated or not in the model. Thus, the following section discusses about the nature and significance of the model misspecification tests.

### 3.4. Model specification

The majority of studies on profitability, the study conducted by (P. Molyneux and J. Thornton, 1992) and (A. Demirguc-Kunt and H. Huizinga, 2000), are used linear regression models to estimate the effects of diverse factors which may be significant in amplification of profits.

By taking all explanatory variables into consideration, the extended equation was formulated as follows.

$$ROA_{i,t} = \alpha + \beta_1 GT_{i,t} + \beta_2 TG_{i,t} + \beta_3 AGE_{i,t} + \beta_4 CAPEF_{i,t} + \beta_5 SZ_{i,t} + \beta_6 OPEF_{i,t} + \beta_7 LIQ_{i,t} + \beta_8 RGGR_{i,t} + \beta_9 INFRI_{i,t} + \varepsilon_{i,t}$$

Whereas,

$ROA_{i,t}$  = the profitability of firm  $i$  in time  $t$

$GT_{i,t}$  = Growth Opportunity (log of total assets) for firm  $i$  in time  $t$

$SZ_{i,t}$  = Size of the firm (Logarithm of Total sales) for firm  $i$  in time  $t$

$TG_{i,t}$  = Asset structure (Fixed Assets / Total Assets) for firm  $i$  in time  $t$

$LIQ_{i,t}$  = Liquidity (the ratio of current assets to Short-term liability) for firm  $i$  in time  $t$

$CAPEF_{i,t}$  = Capital efficiency (net sales to equity ratio) for firm  $i$  in time  $t$

$AGE_{i,t}$  = Operational age of the firm  $i$  in time  $t$

$OPEF_{i,t}$  = Operational efficiency (operating cost to operating income) for firm  $i$  in time  $t$

$INF_{i,t}$  = Food inflation in time  $t$

$RGGR_{i,t}$  = Real GDP Growth rate in time  $t$

$\epsilon_{it}$  = Error term which is assumed to have a normal distribution and  $\alpha$  is constant term,  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9$ , and are the coefficients of the independent variables.

## Chapter Four

### Data Analysis and Discussion

The preceding chapter presented the research methods adopted in the study. The major purpose of this study was to identify the internal as well as the external determinants of wheat flour manufacturing firms in Adama City. The main data sources to this end are the documents held by MoFED and the firm's themselves. Section 4.1 presents the result of descriptive analysis. Section 4.2 presents the correlation analysis among the dependent and independent variables. Section 4.3 presents tests for the classical linear regression model assumptions. The outcomes of the panel data regression analysis are presented in section 4.4. Finally, Section 4.5 presents tests of hypothesis.

#### 4.1 Descriptive Analysis of the Data

Table 4.4 presents the outcomes of the descriptive statistics for main variables involved in the regression model. Key figures, including mean, standard deviation, minimum and maximum value were reported. This was generated to give overall description about data used in the model and served as data screening tool to spot unreasonable figure.

Table 4.1 Descriptive Statistics

|              | ROA       | SZ       | GT        | TG        | CAPEF    | OPER      | LIQ      | RGGR     | INFR      | AGE      |
|--------------|-----------|----------|-----------|-----------|----------|-----------|----------|----------|-----------|----------|
| Mean         | 0.006746  | 7.046857 | 6.863573  | 0.488839  | 6.110334 | 2.447065  | 21.82865 | 0.106000 | 0.210500  | 8.900000 |
| Median       | 0.022701  | 7.015245 | 6.977580  | 0.510437  | 3.641115 | 2.222658  | 2.937113 | 0.103000 | 0.166000  | 9.000000 |
| Maximum      | 0.193000  | 7.801000 | 7.378000  | 0.890000  | 23.63189 | 33.65122  | 561.1235 | 0.133000 | 0.443000  | 17.00000 |
| Minimum      | -0.292269 | 6.465000 | 6.054000  | 0.087717  | 0.593574 | -32.75398 | 0.176924 | 0.086000 | -0.054000 | 3.000000 |
| Std. Dev.    | 0.100612  | 0.350536 | 0.395269  | 0.201498  | 6.369069 | 9.066735  | 88.73251 | 0.013378 | 0.169900  | 3.828369 |
| Skewness     | -1.291826 | 0.423109 | -0.730169 | -0.330979 | 1.409099 | -0.643872 | 5.831485 | 0.622745 | 0.076074  | 0.271903 |
| Kurtosis     | 4.657004  | 2.234736 | 2.476898  | 2.456321  | 4.169411 | 10.55619  | 35.89371 | 2.908564 | 1.743969  | 2.213069 |
|              |           |          |           |           |          |           |          |          |           |          |
| Jarque-Bera  | 15.70153  | 2.169525 | 4.010372  | 1.222960  | 15.51626 | 97.92387  | 2030.035 | 2.599341 | 2.667936  | 1.524977 |
| Probability  | 0.000389  | 0.337982 | 0.134635  | 0.542547  | 0.000427 | 0.000000  | 0.000000 | 0.272622 | 0.263430  | 0.466504 |
|              |           |          |           |           |          |           |          |          |           |          |
| Sum          | 0.269860  | 281.8743 | 274.5429  | 19.55356  | 244.4134 | 97.88258  | 873.1458 | 4.240000 | 8.420000  | 356.0000 |
| Sum Sq. Dev. | 0.394785  | 4.792137 | 6.093276  | 1.583454  | 1582.037 | 3206.022  | 307064.8 | 0.006980 | 1.125780  | 571.6000 |
| Observations | 40        | 40       | 40        | 40        | 40       | 40        | 40       | 40       | 40        | 40       |

Source: output of Eview 6

According to table 4.1, all variables comprised 40 observations and the profitability measure used in this study namely; ROA indicates that wheat flour firms attained, on average, a positive before tax profit over the last eight years. For the sampled firms, the mean of ROA was 0.67% with a minimum of -29.22% and a maximum of 19.30%. That means, the most profitable firms among the sampled firms earned 19.30 cents of profit before tax for a single birr invested in the assets of the firm. On the other hand, the least profitable firm from the sampled firms incurs 29.22 cents of loss for each birr invested in the assets of the firm. The standard deviation statistics for ROA was 0.100, which indicates that the profitability variation between the selected five wheat flour factories was small. The result implies that there is a big profitability variation on wheat flour manufacturing firms of Adama City.

Explanatory variables also presented in the table 4.1 above and nine explanatory variables which are expected to determine the profitability of manufacturing companies are exhibited; age, size, tangibility, liquidity, operating cost efficiency, capital efficiency, growth, real GDP growth rate and food inflation have different characteristics.

Capital efficiency (CAPEF) has mean value of 6.110, and the moderate standard deviation of 6.369. This shows that the data was consistent because the standard deviation value is not much far from the mean value. Tangibility (TG) shows a mean value of 0.488839, indicating that out of the total assets owned by manufacturing companies 48.9 % is categorized as tangible or fixed assets. Manufacturing companies generally assumed to have huge machinery and equipment used in their operation and the result strengths this fact and majority of their assets are fixed assets.

Liquidity (LIQ) shows a mean value of 21.82865. This means that the manufacturing companies have adequate current assets (liquid assets) that were effectively cover their short term liabilities. Thus, since they have adequate current assets which are assumed to be used to cover their current liability, this high liquidity positions for manufacturing companies may assist them in generating debt financing because their ability in paying liabilities is assumed to be high. The mean value of AGE is 8.90, indicating that the average age of the manufacturing companies is 8.90 years, ranging between the minimum of 3 years and maximum of 17 years.

The company's size (SZ) plays an important role to maintain the position of a company in market. The size of manufacturing companies under this study has mean value of 7.046, and the maximum and minimum values of 7.80 and 6.46 respectively. But the standard deviation value is 0.35 which shows that wheat flour manufacturing companies in Adama City have big variation in their total asset. Growth opportunity (GT) likewise, shows a mean value of 6.86, and the maximum and minimum values are 7.37 and 6.05 respectively, Indicating that the maximum and minimum annual revenue of manufacturing companies are 7.37 and 6.05 respectively.

Table 4.1 also shows that the mean real GDP growth (RGGR) in Ethiopia for the last thirteen years was 0.106 (10.6%), with a maximum of 13.30% and a minimum of 8.60 %. Table 4.4 also presents for Real GDP growth rate a small standard deviation of 0.0134; this implies that economic growth in Ethiopia during the period of 1999 to 2006 E.C remains reasonable stable and the result was more or less in agreement with the governments report regarding economic growth. The other macro-economic variable employed in this study Food inflation (INFR), had somewhat a higher standard deviation (0.169) compared to RGDP; this implies that inflation rate in Ethiopia during the study period remains somewhat unstable.

## **4.2 Correlation analysis**

According to Brooks C., (2008), the correlation between two variables measures the degree of linear association between them. If it is stated that y and x are correlated, it means that y and x are being treated in a completely symmetrical way. Thus, it is not implied that changes in x cause changes in y, or indeed that changes in y cause changes in x. Rather, it is simply stated that there is evidence for a linear relationship between the two variables, and that movements in the two are on average related to an extent given by the correlation coefficient.

The correlation table below shows that six of variables namely size, tangibility, capital efficiency, operating cost efficiency, liquidity and food inflation were positively correlated with ROA; and the remaining variables such as growth, GDP growth and age were negatively correlated to ROA. The result of correlation analysis is discussed in detail as follows:

Table 4.2 Correlation matrix of dependent and independent variables

|       | ROA       | SZ        | GT        | TG        | CAPEF     | OPER      | LIQ       | RGGR      | INFR      | AGE      |
|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| ROA   | 1.000000  |           |           |           |           |           |           |           |           |          |
| SZ    | 0.215654  | 1.000000  |           |           |           |           |           |           |           |          |
| GT    | -0.370547 | 0.316134  | 1.000000  |           |           |           |           |           |           |          |
| TG    | 0.163756  | 0.306281  | -0.458275 | 1.000000  |           |           |           |           |           |          |
| CAPEF | 0.339482  | 0.295212  | 0.076991  | -0.242352 | 1.000000  |           |           |           |           |          |
| OPER  | 0.288264  | -0.136046 | 0.104820  | -0.266825 | 0.167741  | 1.000000  |           |           |           |          |
| LIQ   | 0.011806  | -0.088758 | -0.134793 | -0.059646 | -0.150432 | -0.364880 | 1.000000  |           |           |          |
| RGGR  | -0.055539 | -0.366380 | -0.108054 | -0.072541 | -0.199473 | 0.126779  | -0.039245 | 1.000000  |           |          |
| INFR  | 0.262159  | 0.036567  | -0.100993 | 0.025519  | 0.082186  | 0.342637  | -0.276741 | -0.307011 | 1.000000  |          |
| AGE   | -0.562057 | 0.262359  | 0.700693  | -0.426314 | 0.151661  | -0.074912 | -0.148500 | -0.180231 | -0.173255 | 1.000000 |

Source: output of Eview 6

### **Correlation analysis results discussion between ROA and each company specific (internal) variables.**

The coefficient of correlation between ROA and size was 0.21565. It shows that there is weak and positive relationship between them and also it means that when size of the firm increases by 100%, ROA of wheat flour companies increases by 21.56%. Another company specific (internal) variable employed in the study was growth. The coefficient of correlation between ROA and growth was -0.370547, which indicates that there is negative correlation between ROA and growth. It further shows that if growth is increase by 100%, ROA will be decreased by 37.05%. The coefficient of correlation between ROA and tangibility was 0.163756. This figure reveals that there is weak and positive relationship between ROA and tangibility over the last eight years. It further indicates that when fixed asset of the firm is increased by 100%, ROA will be increased by 16.38%. The coefficient of correlation between ROA and capital efficiency was 0.339482. This shows that there is positive relationship between capital efficiency and ROA. ROA is increased by 33.95% when capital efficiency is increased by 100%. The coefficient of correlation between ROA and operating cost efficiency was 0.288264. It

shows that there is weak and positive relationship between them and also it means that when operating cost of the firm increases by 100%, ROA of wheat flour companies increases by 28.83%. The coefficient of correlation between ROA and liquidity was 0.011806. This figure reveals that there was very weak and positive relationship between ROA and liquidity over the last eight years. The last company specific (internal) variable used in this study was age. The coefficient of correlation between ROA and age was -0.562057, which shows that the relation between ROA and age very high and negative over the last eight years. This figure reveals that an increase of age by 100% will result in decrease of ROA by -56.21%.

### **Correlation analysis results discussion between ROA and each macroeconomic (external) variables.**

The coefficient of correlation between ROA and food inflation was 0.262159. The figure shows that if food inflation is increased by 100%, ROA will increase by 26.22%. The coefficient of correlation between ROA and GDP growth was -0.055539. This shows the relationship between ROA and GDP is weak and negative relationship with ROA. The figure indicates that an increase of GDP by 100% will result in decrease of ROA by -5.55%.

### **Correlation analysis results discussion between two independent variables**

Total asset variable was positively correlated to age, inflation, tangibility, growth and capital efficiency with correlation coefficient of 0.262359, 0.036567, 0.306281, 0.316134 and 0.295212 respectively. On the contrary, it was negatively correlated with operating expense, liquidity and GDP growth by having correlation coefficient of -0.136046, -0.088758 and -0.366380 respectively. Growth was positively correlated with capital efficiency, age and operating cost efficiency with correlation coefficient of 0.076991, 0.700693 and 0.104820 respectively. Whereas it was negatively correlated with food inflation, GDP growth, liquidity and tangibility with correlation coefficient of -0.100993, -0.108054, -0.134793 and -0.458275 respectively.

Tangibility was positively correlated only with food inflation with correlation coefficient of 0.025519. On the contrary, it was negatively correlated with age, capital efficiency, operating efficiency, liquidity and GDP by having correlation coefficient of -0.426314, -

0.242352, -0.266825, -0.059646 and -0.072541 respectively. Capital efficiency was negatively correlated with liquidity and GDP with correlation coefficient of -0.1504232 and -0.199473 respectively. Age, food inflation and operating efficiency were positively correlated with capital efficiency with correlation coefficient of 0.151661, 0.082186 and 0.167741 respectively. Operating efficiency was positively correlated with GDP and food inflation with a correlation coefficient of 0.126779 and 0.342637 respectively. On the contrary, it was negatively correlated with age and liquidity having correlation coefficient of -0.074912 and -0.364880. Tangibility was negatively correlated only with GDP, food inflation and age with correlation coefficient of -0.039245, -0.2764741 and -0.148500. GDP growth was negatively correlated with inflation and age with correlation coefficient of -0.307011 and -0.18023 respectively. Food Inflation was negatively correlated with age with a correlation coefficient of -0.173255.

### **4.3. Test results for the classical linear regression model assumptions**

In this study as mentioned in chapter three diagnostic tests were carried out to ensure that the data fits the basic assumptions of classical linear regression model. Consequently, the results for model misspecification tests are presented as follows:

#### **4.3.1. Test for average value the error term is zero ( $E(u_t) = 0$ )**

The test for the mean of the error term is zero is the first diagnostic test conducted in the study. According to Brooks (2008) the existence of constant term in the regression equation will prevent the violation of the assumption the average value of errors is zero. Because the equation or multiple regression model developed in this study included the constant term the assumption of the mean value the error term is zero was not violated.

#### **4.3.2. Test for no Heteroscedasticity $\{var(u_t) = \sigma^2 < \infty\}$**

In this study as shown in table 4.3, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05. The third version of the test statistic, "Scaled explained SS", which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, also gave the

same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05.

Table 4.3 Heteroskedasticity Test: White test

|                     |          |                     |        |
|---------------------|----------|---------------------|--------|
| F-statistic         | 0.533718 | Prob. F(8,31)       | 0.8219 |
| Obs*R-squared       | 4.842389 | Prob. Chi-Square(8) | 0.7743 |
| Scaled explained SS | 9.821172 | Prob. Chi-Square(8) | 0.2778 |

Source: Output of Eview 6.

### 4.3.3. Test for Autocorrelation $\{cov(ui,uj) = 0 \text{ for } i \neq j\}$

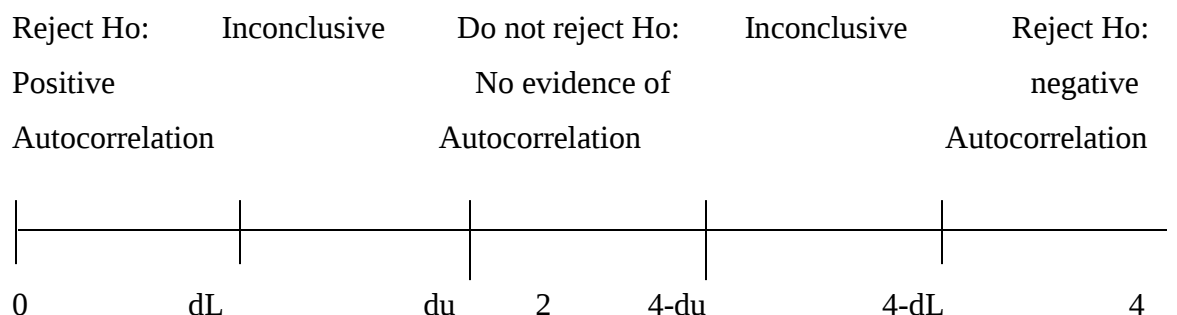
According to Brooks (2008) the following is the decision rule to reject and not to reject the null hypothesis

- null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value  $d_L$ ; the null hypothesis is also rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value  $d_L$ ;
- The null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value  $d_U$  and 4 minus the upper critical value  $d_U$ .
- The null hypothesis is neither rejected or fails to be rejected if DW is between lower critical value  $d_L$  and the upper critical value  $d_U$  or if DW is in between 4 minus the upper critical value  $d_U$  and 4 minus the lower critical value  $d_L$ .

The Durbin-Watson test statistic value in table 4.2 was 2.136. As mentioned in the previous chapter to empirically analyze determinants of profitability in case of wheat flour manufacturing firms in Adama Town, 40 (8\*5) observations were used in the model. Moreover, there were 9 regressors and an intercept term in the model. Therefore, the relevant critical values for the test are  $d_L = 0.844$ ,  $d_U = 1.876$ , i.e., for 40 observations and 9 regressors and  $4 - d_U = 4 - 1.876 = 2.124$ ;  $4 - d_L = 4 - 0.844 = 3.156$ . The Durbin-Watson test statistic of 2.136 is clearly between the  $4 - d_U$  which is 2.124 and the critical value of  $4 - d_L$  i.e. 3.156. And thus the null hypothesis of no autocorrelation is

within the inconclusive region. Therefore there is no evidence of autocorrelation in the study.

**Figure 4.1 Rejection, non-rejection, and inconclusive regions for DW test**



**Table 4.4 Autocorelation Test: DW Test**

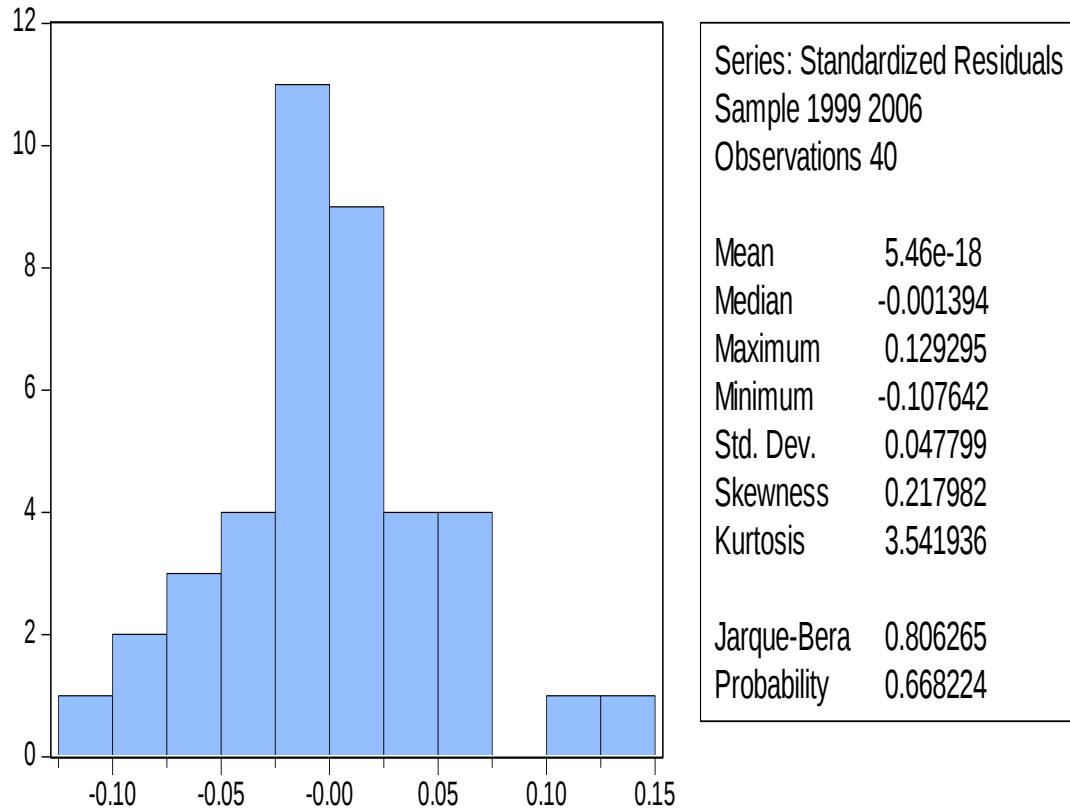
| Variable                           | DW test static result |
|------------------------------------|-----------------------|
| All firm-specific & macro-economic | 2.136                 |

Source: Financial statements of firms, MoFED reports & own computation

#### **4.3.4. Test for normality $\{ut \sim N(0, \sigma^2)\}$**

According to Chris Brooks (2008), one of the most commonly applied tests for normality is the Bera-Jarque test. Bera-Jarque uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments -- the mean and the variance. The standardized third and fourth moments of a distribution are known as its Skewness and kurtosis. Skewness measures the extent to which a distribution is not symmetric about its mean value and a normal distribution is symmetric about its mean, while a skewed distribution will not be. Kurtosis measures how fat the tails of the distribution are. A normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. If the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant. This means that the p-value should be bigger than 0.05 to not reject the null of normality at the 5% level. The null hypothesis for the normality test was the data is not normally distributed and the alternative hypothesis says that the data is normally distributed.

**Figure 4.2 Normality test for residual**



Source: Output of Eview 6

#### **4.3.5. Test for Multicollinearity**

The final test which is conducted in this study is the multicollinearity test, this help to identify the correlation between explanatory variables and to avoid double effect of independent variable from the model. The next table, table 4.5 described correlation among explanatory variables. A correlation is a single number that describes the degree of relationship between two variables. In other words, multicollinearity describes the relationship among explanatory variables. As indicated on the correlation matrix almost all correlations that have occurred among explanatory variables are surprisingly weak correlations; this indicates there is no the existence of multicollinearity problem on the study. The recommendation of (Kennedy, 2008) is taken into account in judging whether or not multicollinearity problem seriously persists in the present study. To recap

Kennedy, multicollinearity will be a series problem when the correlation is above 0.80. (Cooper & Schindler, 2009) suggested that a correlation coefficient above 0.8 between explanatory variables should be corrected for because it is a sign for multicollinearity problem. (Malhotra, 2007) argued that the correlation coefficient can be 0.75. Lastly, Hair *et al.* (2006) also argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Thus, explanatory variable Growth opportunity has been **0.7007** correlation coefficient with Age of the firm, which is not said to be series multicollinearity problem. The pair-wise correlation indicated in Table 4.5 shows that in general the correlations between the explanatory variables are not strong. Then balanced panel data models are applied to control for multicollinearity.

Table 4.5. Correlation matrixes of independent variables

|              | <b>SZ</b> | <b>GT</b>       | <b>TG</b> | <b>CAPEF</b> | <b>OPER</b> | <b>LIQ</b> | <b>RGGR</b> | <b>INFR</b> | <b>AGE</b> |
|--------------|-----------|-----------------|-----------|--------------|-------------|------------|-------------|-------------|------------|
| <b>SZ</b>    | 1.000000  |                 |           |              |             |            |             |             |            |
| <b>GT</b>    | 0.316134  | 1.000000        |           |              |             |            |             |             |            |
| <b>TG</b>    | 0.306281  | -0.458275       | 1.000000  |              |             |            |             |             |            |
| <b>CAPEF</b> | 0.295212  | 0.076991        | -0.242352 | 1.000000     |             |            |             |             |            |
| <b>OPER</b>  | -0.136046 | 0.104820        | -0.266825 | 0.167741     | 1.000000    |            |             |             |            |
| <b>LIQ</b>   | -0.088758 | -0.134793       | -0.059646 | -0.150432    | -0.364880   | 1.000000   |             |             |            |
| <b>RGGR</b>  | -0.366380 | -0.108054       | -0.072541 | -0.199473    | 0.126779    | -0.039245  | 1.000000    |             |            |
| <b>INFR</b>  | 0.036567  | -0.100993       | 0.025519  | 0.082186     | 0.342637    | -0.276741  | -0.307011   | 1.000000    |            |
| <b>AGE</b>   | 0.262359  | <b>0.700693</b> | -0.426314 | 0.151661     | -0.074912   | -0.148500  | -0.180231   | -0.173255   | 1.000000   |

Source: output of Eview 6

#### 4.4. Multiple regression analysis

This section presents the empirical findings from the econometric results on determinants of Wheat flour manufacturing profitability in Adama Town. The section covers the empirical regression model used in this study and the results of the regression analysis.

**Empirical model:** As presented in the third chapter the empirical model used in the study in order to examine the determinants of profitability performance of wheat flour manufacturing firms in Adama Town was provided as follows:

$$ROA_{i,t} = \alpha + \beta_1 GT_{i,t} + \beta_2 TG_{i,t} + \beta_3 AGE_{i,t} + \beta_4 CAPEF_{i,t} + \beta_5 SZ_{i,t} + \beta_6 OPEF_{i,t} + \beta_7 LIQ_{i,t} + \beta_8 RGGR_{i,t} + \beta_9 INFR_{i,t} + \varepsilon_{i,t}$$

The estimation result of the operational panel regression model used in this study is presented in table 4.6. From table 4.6 the R-squared statistics and the adjusted-R squared statistics of the model was 77.43% and 66.14% respectively. The result indicates that the changes in the independent variables explain 77.43% of the changes in the dependent variable. That is tangibility, growth opportunity, size of the firm, operating cost efficiency, liquidity, capital efficiency; age, real gross domestic product, and food inflation rate collectively explain 77.43% of the changes in ROA. The remaining 22.57% of changes was explained by other determinants which are not included in the model. Thus these variables collectively, are good explanatory variables of the profitability of wheat flour manufacturing in Adama Town. The null hypothesis of F-statistic (the overall test of significance) that the  $R^2$  is equal to zero was rejected at 1% as the p-value was sufficiently low. F value of 0.00000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

Based on the results shown in table 4.6, from firm-specific independent variables firm size, age of the firm and capital efficiency had statistically significant impact on profitability of wheat flour manufacturings. On the other hand, other internal variable, i.e., tangibility, liquidity, operating cost efficiency, growth are insignificant variable. From the external independent variables used in this study, food inflation was significant variable and real GDP were not. Among the significant variables, size of the firm was

significant at 1% significance level, since the p-value for this variable were **0.0008**. This means size of the firm have great contribution to their profitability. The result also shows that manufacturing company should focus on to raise their sales level to enhance profitability. Whereas variables age of the firm were significant at 5% significance level, since the p-value were **0.0425**. Finally, Food inflation, and capital efficiency was significant at 10% significance level, since p-value was **0.0775** and **0.0776** respectively.

Table 4.6 Regression Results for determinants of wheat flour manufacturing's profitability.

Dependent Variable: ROA

Method: Panel Least Squares

Date: 05/21/15 Time: 04:25

Sample: 2007 2014

Periods included: 8

Cross-sections included: 5

Total panel (balanced) observations: 40

| Variable | Coefficient | Std. Error | t-Statistic | Prob.     |
|----------|-------------|------------|-------------|-----------|
| C        | -1.426267   | 0.449237   | -3.174863   | 0.0038    |
| SZ       | 0.193036    | 0.051103   | 3.777419    | 0.0008*** |
| GT       | 0.022754    | 0.057980   | 0.392452    | 0.6979    |
| TG       | -0.114821   | 0.104805   | -1.095576   | 0.2833    |
| CAPEF    | -0.005941   | 0.003234   | -1.837243   | 0.0776*   |
| OPER     | 0.000123    | 0.001555   | 0.079346    | 0.9374    |
| LIQ      | 8.93E-05    | 0.000133   | 0.672353    | 0.5073    |
| RGGR     | 0.787855    | 0.902642   | 0.872832    | 0.3907    |
| INFR     | 0.149967    | 0.081591   | 1.838030    | 0.0775*   |
| AGE      | -0.012175   | 0.005700   | -2.136061   | 0.0423**  |

#### Effects Specification

Cross-section fixed (dummy variables)

|                    |          |                    |          |
|--------------------|----------|--------------------|----------|
| R-squared          | 0.774296 | Durbin Watson stat | 2.136063 |
| Adjusted R-squared | 0.661443 |                    |          |
| S.E. of regression | 0.058541 |                    |          |
| Sum squared resid  | 0.089105 |                    |          |
| F-statistic        | 6.861147 |                    |          |
| Prob(F-statistic)  | 0.000017 |                    |          |

\*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% levels respectively.

Source: output of Eview 6

In addition, table 4.6 also shows that the coefficient of tangibility, capital efficiency and age of firms against ROA were negative as far as the coefficients for those variables are negative -0.1148, -0.0059 and -0.012 respectively. This indicates that there was an inverse relationship between the aforementioned three independent variables and ROA. Thus the increase of those variables will lead to a decrease in ROA. On the other hand, variables like firm size, liquidity, growth, operating cost efficiency, real GDP growth and food inflation had a positive relationship with profitability as far as their respective coefficients were 0.1930, 0.000089, 0.0227, 0.00012, 0.7878, and 0.149. This revealed that there was a direct relationship between the above six independent variables and ROA. In general as per the regression results provided in table, 4.6 among the nine repressors' used in this study four of them were significant.

In general, so far, the results of the documentary analysis which includes tests for the classical linear regression model, descriptive statistics, correlation matrix & regression analysis have been presented. The results of the tests for the classical linear regression model showed as the data fit the basic assumptions of CLRMs.

***The econometrics model employed in this study was the following***

$$ROA_{i,t} = \alpha + \beta_1 GT_{i,t} + \beta_2 TG_{i,t} + \beta_3 AGE_{i,t} + \beta_4 CAPEF_{i,t} + \beta_5 SZ_{i,t} + \beta_6 OPEF_{i,t} + \beta_7 LIQ_{i,t} + \beta_8 RGGR_{i,t} + \beta_9 INF_{i,t} + \varepsilon_{i,t}$$

***After running this equation using Eview 6, the regression model was as follows.***

$$ROA_{i,t} = -1.426 + 0.022GT_{i,t} - 0.115TG_{i,t} - 0.012AGE_{i,t} - 0.006CAPEF_{i,t} + 0.193SZ_{i,t} + 0.0001OPEF_{i,t} + 0.00009LIQ_{i,t} + 0.7878RGGR_{i,t} + 0.1499INF_{i,t}$$

#### **4.5. Tests of hypothesis**

This section of the chapter discusses the analysis of the results. The analysis is based on the theoretical framework and the data collected through the data collection instruments. The data are analyzed in light of the specific research question and hypotheses stated. Hence, the analysis focuses mainly on the results of the regression analysis for the selected firm-specific and macro-economic factors that have an impact on firm's profitability. These selected factors are capital efficiency, operating cost efficiency,

liquidity, firm size, age, tangibility, growth, real GDP growth rate, and food inflation rate.

### **Capital efficiency**

The coefficient of capital strength which is measured by net sales to shareholders equity was -0.006, which shows 100% increment in the amount of capital of the company; there were 0.6% decrements in the value of dependent variable, i.e. ROA. and statistically significant at 10% significance level ( $p\text{-value}=0.0776$ ). Moreover, the coefficient of the ratio of equity to asset which was relatively lower as compared to other variables shows that an increase in capital strength were result decrease in profitability. Furthermore, the finding was also inconsistent with previous study of (Mesfin, 2014) point out that profitability is positively affected by capital. Therefore, the null hypothesis was rejected in the study because according to the finding of the study, capital efficiency has a significant impact on profitability performance. Other studies that were conducted on profitability of financial institution also shows the significance of capital efficiency on profitability of a firm (Berger, 1995b), (Pasiouras & Kosmidou, 2007), (Athanasoglou et al., 2008), (Trujillo-Ponce, 2011), (Feysa, 2014), (Damen, 2011) and (Amdemichael, 2012) and (Ramall, 2009).

### **Firm size**

Firm size which is measured by the natural log of total assets had a positive impact on the profitability of wheat flour manufacturing firms in Adama Town and conforms to a prior restriction. The coefficient of firm size was 0.193, which shows 100% increment in firm size; there were 19.30% increments in the value of dependent variable, i.e. ROA. The variable was also statistically significant in the model at  $p=0.01$  significance level even. Further, the positive coefficient between wheat flour manufacturing firms in Adama Town firm's size and profitability clearly indicated that larger firms of the Town are better placed than smaller firms of the town in harnessing economies of scale in transactions. From this one can conclude that size of the firm have great contribution to their profitability and the result also shows that manufacturing company should focus on to raise their sales level to enhance profitability. Therefore, the null hypothesis was rejected in the study because according to the finding of the study, firm size has a

positive significant impact on profitability performance. The finding was consistent with the finding of (Babalola, Y. A., 2013), (Dharmendra S. Mistry, 2012), (Nousheen Tariq Bhutta and Arshad Hasan, 2013), (Mesfin, 2014), (Nousheen et. al., 2013).

### **Liquidity**

Liquidity of the firm has a coefficient value of 0.000089, which is the lowest coefficient value from the independent variable, which shows 100% increment in the amount of liquidity of the company; there were 0.0089% increments in the value of dependent variable, i.e. ROA. And it was also insignificant, which has p-value of 0.5073. Liquidity is statistically not significant even at 10 percent significance level because the p-value of liquidity was 0.5073 which is much greater than 10%. Therefore, the researcher failed to reject the null hypothesis which shows that liquidity of the firm was not strong determinant factor in determining the profitability of wheat flour manufacturing firms of Adama town, during this research period. The finding was inconsistent with the finding of T. Pratheepan (2014), Mesfin (2014).

### **Age of the firm**

Age of the firm has a coefficient value of -0.12, which shows one year increment in the age of the company, there was 0.12 decrement in the value of dependent variable, i.e. ROA. And it was very significant at 0.05 significant levels, which has p-value of 0.0423. Therefore, the null hypothesis was rejected in the study because according to the finding of the study, age of the firm has a significant impact on profitability performance. This shows that age of the firm has strong determinant factor in determining the profitability of wheat flour manufacturing firms of Adama town, during this research period, which was consistent with the finding of (Mesfin D., 2014) , (Aspasia Vlachvei et al., 2008).

### **Growth**

Growth has a positive coefficient but it is insignificant relationship to profitability. The coefficient value is 0.0227. This means 100% increase in Growth of the firm leads to increase in 2.27% profitability of wheat flour manufacturing company in Adama town. But the value of increment in profitability was not significant because the value of growth coefficient were small. It has also p-value of 0.698, which have weak impact on

the profitability of wheat flour manufacturing company in Adama Town. Growth is statistically not significant even at 10 percent significance level because the p-value of growth was 0.698 which is much greater than 10%. Therefore, the researcher failed to reject the null hypothesis which is inconsistent with the study of (Mesfin, 2014), (Aspasia Vlachvei et al., 2008).

### **Operating cost efficiency**

The coefficient of the ratio of operating cost to income, which is 0.000123 which provides information on the efficiency of the management regarding expenses relative to income, was positive but statistically insignificant, which has a p-value of 0.9374. The coefficient result shows that an addition increment in operation cost changes the value of ROA by 0.000123 and the result of p-value 0.9374 shows that operating cost efficiency has very weak impact in determining the profitability of wheat flour manufacturing firms of Adama Town, during the past eight years. Therefore, the researcher failed to reject the null hypothesis. This finding was inconsistent with previous studies of (Okwo I. et al., 2012), (Athanasoglou et al. 2008), (Feysa, 2014)

### **Tangibility**

Tangibility has a negative coefficient and it shows insignificant relationship with profitability of wheat flour manufacturing firms those operating in Adama Town. The coefficient value is  $-0.1148$ . It means one unit change in tangibility of assets will bring negative change in profitability by 11.48%. Tangibility has t-value of  $-1.095$  against a p-value of 0.2833. Thus our hypothesis is rejected by the statically insignificant negative relationship between tangibility and profitability. It shows that a firm has less tangibility of assets will be more profitable. Therefore, the researcher failed to reject the null hypothesis and the study was consistent with previous study of (Nousheen Tariq Bhutta and Arshad Hasan, 2013), (Nousheen et. al., 2013).

## **Gross domestic product**

As expected, firm's profitability was positively related to the real GDP growth, with a coefficient of 0.7878, mainly through the impact of the economic cycle on the demand for food by households and firms. But, the growth of GDP was statistically insignificant, which has a p-value of 0.3907. This shows that real GDP growth has weak impact on the profitability of wheat flour manufacturing firms of Adama town during the period of this study. GDP is statistically not significant even at 10 percent significance level because the p-value of liquidity was 0.3907 which is greater than 10%. Therefore, the researcher failed to reject the null hypothesis. The result of this study was inconsistent with previous study of (Demirguc-Kunt and Huizinga, 2000); (Athanasoglou et al., 2005), (Feyisa D., 2002), and (Amdemichael, 2012) that the researcher were concluded that positive and strong correlation existed between economic growth (GDP) and firm profitability

## **Inflation**

As it is expected, the coefficient of food inflation was positive, 0.1499, and also statistically significant, thus, the effect of inflation on wheat flour manufacturing profitability of Adama Town is significant. The findings also suggested that food inflation is a significant determinant of firm's profitability in wheat flour manufacturing's of Adama Town, as far as the parameter for this variable is significant as illustrated by the small p-values of 0.0775. So, the result of this study clearly shows as food inflation has a positive impact on profitability and statistically significant determinant of firms profitability. Therefore, the null hypothesis was rejected in the study because according to the finding of the study, food inflation has a positive significant impact on profitability performance. In terms of food inflation impact on ROA, previous studies of (Nousheen et. al., 2013), (Nousheen Tariq Bhutta and Arshad Hasan, 2013) showed a positive coefficient result but insignificant interval level, which shows is inconsistent with the this study.

Table 4.7. Summary of Expected and Actual Result Relationships.

| Independent variable         | Dependent variable    | Hypothesized             | Actual Relationship | Significance level at 1%, 5% and 10% |
|------------------------------|-----------------------|--------------------------|---------------------|--------------------------------------|
| Size(SZ)                     | Return on Asset (ROA) | Positive and Significant | Positive            | Significant at 1%                    |
| Growth(GT)                   |                       | Positive and Significant | Positive            | Insignificant                        |
| Tangibility(TG)              |                       | Negative and Significant | Negative            | Insignificant                        |
| Capital Efficiency(CAPEF)    |                       | Positive and Significant | Negative            | Significant at 10%                   |
| Operational Efficiency(OPER) |                       | Negative and Significant | Positive            | Insignificant                        |
| Liquidity(LIQ)               |                       | Negative and Significant | Positive            | Insignificant                        |
| Age(AGE)                     |                       | Positive and Significant | Negative            | Significant at 5%                    |
| Real GDP Growth(RGGR)        |                       | Positive and Significant | Positive            | Insignificant                        |
| Food inflation(INFR)         |                       | Positive and Significant | Positive            | Significant at 10%                   |

## **Chapter Five**

### **Conclusion and Recommendation**

The previous chapter presented the analysis of the findings, while this chapter deals with the conclusions and recommendations provided based on the findings of the study. Accordingly, this chapter is organized into two subsections. The first section presents the conclusions whereas the second section presents the recommendations.

#### **5.1 Conclusion**

This study aims to identify the main firm-specific and macro-economic determinants that can determine wheat flour manufacturing firm's profitability and to what extent these determinants exert impact on firms' profitability. In doing so, previous studies on firm's profitability have been reviewed and it is summarized that the profitability of firm is usually expressed as a function of internal and external determinants. The internal determinants refers to the factors originate from firms accounts (balance sheets and/or profit and loss accounts) and therefore could be termed firm-specific determinants of profitability. The external determinants are variables that are not related to firm management but reflect the economic and legal environment that affects the operation and performance of manufacturing companies. Empirical results from previous studies conclude that internal factors explain a large proportion of firms' profitability; nevertheless, external factors have also an impact on the performance.

A number of explanatory variables have been proposed for both categories, according to the nature and purpose of each study. Studies dealing with internal determinants employ variables such as firm size, age of the firm, capital efficiency, liquidity, growth opportunity, tangibility etc while for external determinants, several factors have been suggested as impacting on profitability and these factors can further distinguish between control variables that describe the macroeconomic environment, such as inflation and economic growth, and variables that represent market characteristics. The latter refer to market concentration, industry size and ownership status.

Based on the review on previous studies and general theories of profitability, the present study investigated the impact of some selected firm-specific and macro-economic determinants on the profitability of wheat flour manufacturing firms of Adama City over the period of 2007 to 2014. The firm-specific factors that were used in this study include variables such as capital efficiency, operation cost efficiency, age, firm size, liquidity, tangibility, growth. On the other hand two macroeconomic conditions indicator variables were employed, i.e., real GDP growth and food inflation. To comply with the objective of this research, the paper is primarily based on quantitative research method. The quantitative data were mainly obtained from MoFED and firms themselves through documentary analysis in order to identify and measure the determinants of firm's profitability. In specific, multiple regression analysis is adopted to measure the effect of determinants on firm's profitability quantitatively.

For testing the research hypotheses, five wheat flour manufacturing firms of Adama City were selected and the necessary financial data were collected for the time period of 2007 to 2014. The empirical findings on the determinants of wheat flour manufacturing firm's profitability in Adama City for the sample suggest the following conclusions.

The descriptive statistics shows that pertaining to company specific (internal) variable, Liquidity has the highest mean value which is 21.82 and Tangibility has the least mean value which is 0.4888. Liquidity is the highest volatile variable which has the standard deviation of 88.7325 and tangibility is the lowest volatile variable which has the standard deviation of 0.201498. Regarding to the macroeconomic variables, inflation has the highest mean value which is 0.21 and GDP has the least mean value which is 0.106. Inflation is the highest volatile variable which has the standard deviation of 0.1699 and GDP is the least volatile variable which has the standard deviation of 0.013378. Generally the mean values of all variables ranges from the least value of 0.106 for GDP variable to the highest mean value of 21.82 of Liquidity variable. Whereas the standard deviation of all variables ranges from the least value of 0.013378 for GDP (which shows GDP is the least volatile variable) to the highest value of 88.7325 for Liquidity which indicates liquidity is the highest volatile variable).

Capital adequacy has mean value of 6.110, and the moderate standard deviation of 6.369. This shows that the data was consistent because the standard deviation value is

not much far from the mean value. Tangibility (TG) shows a mean value of 0.488839, indicating that out of the total assets owned by manufacturing companies 48.9 % is categorized as tangible or fixed assets. Manufacturing companies generally assumed to have huge machinery and equipment used in their operation and the result strengthens this fact and majority of their assets are fixed assets.

Liquidity (LIQ) shows a mean value of 21.82865. This means that the manufacturing companies have adequate current assets (liquid assets) that were effectively cover their short term liabilities. Thus, since they have adequate current assets which are assumed to be used to cover their current liability, this high liquidity positions for manufacturing companies may assist them in generating debt financing because their ability in paying liabilities is assumed to be high. The mean value of AGE is 8.90, indicating that the average age of the manufacturing companies is 8.90 years, ranging between the minimum of 3 years and maximum of 17 years.

The company's size (SZ) plays an important role to maintain the position of a company in market. The size of manufacturing companies under this study has mean value of 7.046, and the maximum and minimum values of 7.80 and 6.46 respectively. But the standard deviation value is 0.35 which shows that wheat flour manufacturing companies in Adama Town have big variation in their total asset. Growth opportunity (GT) likewise, shows a mean value of 6.86, and the maximum and minimum values are 7.37 and 6.05 respectively, indicating that the maximum and minimum annual revenue of manufacturing companies are 7.37 and 6.05 respectively.

The mean value for real GDP growth (RGGR) in Ethiopia for the last eight years GDP growth was 0.106 (10.6%), with a maximum of 13.30% and a minimum of 8.60 %. Table 4.4 also presents for Real GDP growth rate a small standard deviation of 0.0134; this implies that economic growth in Ethiopia during the period of 2007 to 2014 remains reasonable stable and the result was more or less in agreement with the government's report regarding economic growth. The other macro-economic variable employed in this study Food inflation (INFR), had somewhat a higher standard deviation (0.169) compared to RGDP; this implies that inflation rate in Ethiopia during the study period remains somewhat unstable.

In relation to ROA, capital efficiency, food inflation, size and age of the firm have significant impact on the profitability of wheat flour manufacturing company. But capital efficiency and age had negative coefficients. This may show that, even though it has significant effect on profitability, capital and operational age of the company has inverse relation with ROA. All explanatory variables, except age, capital efficiency and tangibility have a positive relationship with return on asset. From this, size of the firm, tangibility, growth, real GDP growth and food inflation were in agreement with the hypothesis. The explanatory variables included in this study jointly explain about 77.43 percent of the variation in return on asset.

To sum it up, based on the findings it can be concluded that capital efficiency, age of the firm, firm size and food inflation have significant impact on ROA; which means any increase (decrease) on the value of these variables leads to an increase (decrease) on profitability of wheat flour manufacturing company in Adama.

## 5.2 Recommendation

In order to hold up risky surprises and maintaining financial stability, it is very important to identify the determinants that mostly influence the overall performance of manufacturing company. Therefore, based on secondary data of the study results, the researcher would like to forward the following recommendations for the concerned bodies.

Management bodies of wheat flour manufacturing company should do their best to strengthen the firm-specific factors like capital efficiency, age and firm size which have significance effect in profitability.

Concerning Macroeconomic factor, i.e., food inflation, firm managers may be able to predict that if there is food inflation in the economy there will be positive relation with profitability.

In the analyzed situation, capital efficiency and age had negative coefficients. Even though they have significant effect on profitability, capital and operational age of the company has inverse relation with ROA. This may be due to insufficient capital that cannot be made enough even by retained earnings, therefore there should be additional capital to be injected by the shareholders. On the other hand, the operational age has negative coefficient this may be due to lack of advertisement and managers of such companies should consider on making continuous advertisement as the operational age of the firms increases, which may have a positive relation with profitability.

Generally, the elements on which it can intervene for improving the performance are those with a high impact like age and operating cost efficiency, growth, size, liquidity, food inflation, and real GDP growth and factors that influenced the profitability negatively are age, capital efficiency and tangibility which constitute some reserves of economic increasing in the future activity. Therefore, the management should strive to

strengthen those factors with a high impact for improving the performance and also the management takes action on those factors which reserves the profitability of the firm.

This study examined determinant factors of profitability performance of wheat flour manufacturing in Adama City. The employed variables explanatory power, adjusted  $R^2$ , was 0.66144 which indicates that some important variables which determine the profitability performance of wheat flour companies might have been left for the researchers in the future. Therefore, future researchers can model and investigate both quantitative and qualitative variables like the effect of raw wheat production in the area as well as at national level, government regulation and other variables and examine their impact on profitability performance of wheat flour manufacturing's by employing mixed research methodology for better insight on the issue of the determinant of profitability performance of wheat flour manufacturing firms of Adama City.

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## Appendixes

### Appendix –I: Tests for the Heteroskedasticity Test: White Test

Heteroskedasticity Test: White test

|                     |          |                     |        |
|---------------------|----------|---------------------|--------|
| F-statistic         | 0.533718 | Prob. F(8,31)       | 0.8219 |
| Obs*R-squared       | 4.842389 | Prob. Chi-Square(8) | 0.7743 |
| Scaled explained SS | 9.821172 | Prob. Chi-Square(8) | 0.2778 |

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/27/15 Time: 15:26

Sample: 1 40

Included observations: 40

White Heteroskedasticity-Consistent Standard Errors & Covariance

| Variable | Coefficient | Std. Error | t-Statistic | Prob.  |
|----------|-------------|------------|-------------|--------|
| C        | 0.569656    | 0.507611   | 1.122230    | 0.2704 |
| GT^2     | -0.002894   | 0.005813   | -0.497787   | 0.6221 |
| TG^2     | -0.139611   | 0.175909   | -0.793657   | 0.4334 |
| CAPEF^2  | -0.000128   | 0.000149   | -0.860482   | 0.3961 |
| OPER^2   | -5.52E-05   | 6.38E-05   | -0.866459   | 0.3929 |
| LIQ^2    | -4.65E-07   | 3.50E-07   | -1.327780   | 0.1939 |
| RGGR^2   | -19.66294   | 12.86611   | -1.528274   | 0.1366 |
| INFR^2   | -0.792712   | 0.589388   | -1.344975   | 0.1884 |
| AGE^2    | -0.000294   | 0.000320   | -0.918072   | 0.3657 |

|                    |           |                       |           |
|--------------------|-----------|-----------------------|-----------|
| R-squared          | 0.121060  | Mean dependent var    | 0.066342  |
| Adjusted R-squared | -0.105764 | S.D. dependent var    | 0.169147  |
| S.E. of regression | 0.177867  | Akaike info criterion | -0.420457 |
| Sum squared resid  | 0.980733  | Schwarz criterion     | -0.040459 |
| Log likelihood     | 17.40914  | Hannan-Quinn criter.  | -0.283062 |
| F-statistic        | 0.533718  | Durbin-Watson stat    | 2.171913  |
| Prob(F-statistic)  | 0.821939  |                       |           |

**Appendix-II: Regression Results For determinants of wheat flour manufacturing Profitability.**

Dependent Variable: ROA

Method: Panel Least Squares

Date: 05/27/15 Time: 15:37

Sample: 2007 2014

Periods included: 8

Cross-sections included: 5

Total panel (balanced) observations: 40

| Variable | Coefficient | Std. Error | t-Statistic | Prob.  |
|----------|-------------|------------|-------------|--------|
| C        | -1.426267   | 0.449237   | -3.174863   | 0.0038 |
| SZ       | 0.193036    | 0.051103   | 3.777419    | 0.0008 |
| GT       | 0.022754    | 0.057980   | 0.392452    | 0.6979 |
| TG       | -0.114821   | 0.104805   | -1.095576   | 0.2833 |
| CAPEF    | -0.005941   | 0.003234   | -1.837243   | 0.0776 |
| OPER     | 0.000123    | 0.001555   | 0.079346    | 0.9374 |
| LIQ      | 8.93E-05    | 0.000133   | 0.672353    | 0.5073 |
| RGGR     | 0.787855    | 0.902642   | 0.872832    | 0.3907 |
| INFR     | 0.149967    | 0.081591   | 1.838030    | 0.0775 |
| AGE      | -0.012175   | 0.005700   | -2.136061   | 0.0423 |

Effects Specification

Cross-section fixed (dummy variables)

|                    |          |                       |           |
|--------------------|----------|-----------------------|-----------|
| R-squared          | 0.774296 | Mean dependent var    | 0.006746  |
| Adjusted R-squared | 0.661443 | S.D. dependent var    | 0.100612  |
| S.E. of regression | 0.058541 | Akaike info criterion | -2.568945 |
| Sum squared resid  | 0.089105 | Schwarz criterion     | -1.977837 |
| Log likelihood     | 65.37889 | Hannan-Quinn criter.  | -2.355219 |
| F-statistic        | 6.861147 | Durbin-Watson stat    | 2.136063  |
| Prob(F-statistic)  | 0.000017 |                       |           |

### Appendix- III: Ratio Data

| year | Company<br>name | ROA    | SZ    | GT    | TG    | CAPEF  | OPER    | LIQ     | RGGR  | INFR   | AGE |
|------|-----------------|--------|-------|-------|-------|--------|---------|---------|-------|--------|-----|
| 2007 | YTF             | 0.019  | 6.691 | 7.075 | 0.303 | 7.0    | 5.226   | 2.789   | 0.115 | 0.175  | 8   |
| 2008 | YTF             | 0.003  | 6.625 | 7.131 | 0.239 | 6.024  | 33.651  | 3.668   | 0.112 | 0.349  | 9   |
| 2009 | YTF             | 0.008  | 6.783 | 7.143 | 0.208 | 8.671  | 14.448  | 2.867   | 0.097 | 0.443  | 10  |
| 2010 | YTF             | 0.018  | 6.960 | 7.126 | 0.194 | 13.039 | 6.140   | 3.146   | 0.102 | -0.054 | 11  |
| 2011 | YTF             | 0.019  | 7.200 | 7.215 | 0.140 | 22.671 | 4.445   | 3.008   | 0.133 | 0.157  | 12  |
| 2012 | YTF             | 0.016  | 7.219 | 7.266 | 0.146 | 23.632 | 5.454   | 3.665   | 0.086 | 0.429  | 13  |
| 2013 | YTF             | 0.018  | 6.780 | 7.302 | 0.089 | 11.451 | 4.769   | 3.755   | 0.099 | 0.126  | 14  |
| 2014 | YTF             | 0.009  | 6.752 | 7.244 | 0.088 | 8.071  | 7.805   | 4.678   | 0.104 | 0.059  | 15  |
| 2007 | AWF             | 0.006  | 6.563 | 6.708 | 0.378 | 0.664  | 3.338   | 15.466  | 0.115 | 0.175  | 3   |
| 2008 | AWF             | 0.005  | 6.597 | 6.717 | 0.358 | 0.720  | 14.019  | 11.073  | 0.112 | 0.349  | 4   |
| 2009 | AWF             | -0.057 | 6.776 | 6.609 | 0.408 | 1.085  | -1.248  | 8.136   | 0.097 | 0.443  | 5   |
| 2010 | AWF             | -0.006 | 6.744 | 6.559 | 0.405 | 1.008  | -18.256 | 561.124 | 0.102 | -0.054 | 6   |
| 2011 | AWF             | 0.027  | 6.731 | 6.476 | 0.452 | 0.978  | 4.009   | 7.812   | 0.133 | 0.157  | 7   |
| 2012 | AWF             | 0.130  | 7.509 | 6.786 | 0.610 | 5.875  | 6.927   | 0.724   | 0.086 | 0.429  | 8   |
| 2013 | AWF             | 0.032  | 7.573 | 7.218 | 0.708 | 6.805  | 3.879   | 0.985   | 0.099 | 0.126  | 9   |
| 2014 | AWF             | 0.087  | 7.779 | 6.725 | 0.474 | 2.448  | 1.810   | 86.474  | 0.104 | 0.059  | 10  |
| 2007 | MAF             | 0.028  | 6.778 | 6.823 | 0.619 | 1.386  | 2.602   | 35.049  | 0.115 | 0.175  | 3   |
| 2008 | MAF             | 0.034  | 6.809 | 6.503 | 0.624 | 3.052  | 3.758   | 24.223  | 0.112 | 0.349  | 4   |
| 2009 | MAF             | 0.046  | 7.229 | 6.511 | 0.890 | 8.472  | 3.455   | 0.177   | 0.097 | 0.443  | 5   |
| 2010 | MAF             | 0.015  | 6.955 | 6.993 | 0.654 | 1.075  | 6.383   | 1.233   | 0.102 | -0.054 | 6   |
| 2011 | MAF             | 0.027  | 7.126 | 6.978 | 0.623 | 1.589  | 2.990   | 5.848   | 0.133 | 0.157  | 7   |
| 2012 | MAF             | 0.193  | 7.428 | 6.893 | 0.658 | 3.195  | 1.917   | 4.916   | 0.086 | 0.429  | 8   |
| 2013 | MAF             | 0.031  | 7.801 | 6.978 | 0.460 | 7.595  | 2.528   | 17.026  | 0.099 | 0.126  | 9   |
| 2014 | MAF             | 0.016  | 7.584 | 7.378 | 0.781 | 4.567  | 0.833   | 26.569  | 0.104 | 0.059  | 10  |
| 2007 | BOF             | 0.068  | 6.765 | 6.114 | 0.773 | 5.827  | 0.672   | 1.020   | 0.115 | 0.175  | 3   |
| 2008 | BOF             | 0.078  | 6.903 | 6.115 | 0.681 | 7.451  | 0.812   | 6.217   | 0.112 | 0.349  | 4   |
| 2009 | BOF             | 0.137  | 7.100 | 6.058 | 0.699 | 12.600 | 0.844   | 0.412   | 0.097 | 0.443  | 5   |
| 2010 | BOF             | 0.046  | 6.611 | 6.054 | 0.632 | 4.087  | 0.760   | 1.639   | 0.102 | -0.054 | 6   |
| 2011 | BOF             | 0.052  | 6.465 | 6.077 | 0.540 | 2.147  | 0.742   | 1.777   | 0.133 | 0.157  | 7   |
| 2012 | BOF             | 0.104  | 7.255 | 6.567 | 0.583 | 11.841 | 0.439   | 1.116   | 0.086 | 0.429  | 8   |
| 2013 | BOF             | 0.100  | 7.510 | 6.686 | 0.515 | 21.274 | 0.589   | 16.345  | 0.099 | 0.126  | 9   |
| 2014 | BOF             | 0.026  | 7.443 | 6.973 | 0.763 | 18.260 | 0.789   | 0.591   | 0.104 | 0.059  | 10  |
| 2007 | YERF            | -0.133 | 7.104 | 7.290 | 0.436 | 1.229  | -3.581  | 1.407   | 0.115 | 0.175  | 10  |
| 2008 | YERF            | 0.092  | 7.325 | 7.323 | 0.507 | 1.883  | 0.450   | 1.566   | 0.112 | 0.349  | 11  |
| 2009 | YERF            | 0.030  | 7.373 | 7.323 | 0.387 | 2.100  | 0.823   | 1.655   | 0.097 | 0.443  | 12  |
| 2010 | YERF            | -0.212 | 7.023 | 7.173 | 0.514 | 0.937  | -32.754 | 1.739   | 0.102 | -0.054 | 13  |
| 2011 | YERF            | -0.111 | 7.008 | 7.216 | 0.435 | 0.906  | 9.680   | 1.271   | 0.133 | 0.157  | 14  |
| 2012 | YERF            | -0.219 | 6.824 | 7.113 | 0.475 | 0.594  | -1.236  | 0.983   | 0.086 | 0.429  | 15  |
| 2013 | YERF            | -0.292 | 7.132 | 7.004 | 0.520 | 1.205  | -0.734  | 0.612   | 0.099 | 0.126  | 16  |
|      | YERF            | -0.220 | 7.042 | 7.102 | 0.585 | 0.981  | -1.292  | 0.385   | 0.104 | 0.059  | 17  |

