

# Impact of ISO 9001 Certification on Companies' Performance- The Case of Ethiopian Brewery Companies

By

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## **Abstract**

In this research, the impact of ISO certification on the performance of the companies was studied. This is mainly due to the reason that companies often claim ISO certification can improve the performance of the organization. To investigate this, secondary data of five brewery companies in Ethiopia is collected. The data cover operational activities of the companies over the period of ten years and it is of before and after ISO certification. The collected data was analysed using descriptive statistics and tested for its significance. The model specified is the panel data of five brewery companies over a period of ten years with the help of OLS estimation. The results showed that ISO certification has a significant impact on the companies' performance. The finding also indicated that, after ISO certification the companies have acquired improvements on their total sales. Further study is suggested to investigate the impact of ISO certification on company performance, particularly for Ethiopian Companies.

## **Chapter One**

### **Introduction**

#### **1.1 Background of the Study**

The introduction in 1987 of the first international quality assurance standards- the ISO 9000 series- was greeted importantly in the business world. An ISO 9000 certification is an internationally recognized guarantee that a firm can deliver what it promises, consistently. The ISO 9000 series certification is important to organization seeking to interact internationally. It is also equally important for organizations seeking to perform well in their respective industry.

When we come to Ethiopian context, many manufacturers are currently claiming that they have acquired ISO certificates that helped them to perform well in their respective industry. Some of these companies are currently interacting with their customers internationally while the remaining is still in their domestic markets. Because customers are requiring producers to have a guarantee for their products whether it is produced as per the specifications and the international standards, companies are therefore forced to register for ISO certification.

Moreover, companies are currently requiring their supplier to act according to the international quality systems to reduce the maximum loss they may face due to quality problems. To this point, the organization should have the system that can assure their products and services are produced as per the requirements. To another edge, companies seek to gain ISO certification because they think that it can improve their overall business performance. But, the question here is whether ISO certification can impact their performance or not. With this main question, the study has investigated the impact of ISO certification on the companies' performance.

For this purpose from the beverage industry, brewery companies in Ethiopia are selected for the study purpose. The companies were established at different time frame; however, they all have an ISO certificate.

Each company are certified for ISO 9001 quality management system. These companies are operated at least for four years and above. So it is reasonable to study for their performance based on the available data.

## 1.2 Statement of the Problem

ISO certification stands for certain minimum quality standards that organizations should meet and is said to assure a consistent quality of products, services and processes. The earlier quality standard lies in the fact that they mainly focused on quality control systems when compared to the current ISO situations.

Tummala and Tang (1996) in Singles *et al.*(2000), ISO is based on the notion that specific minimum characteristics of quality systems can be standardized, which can give mutual benefits for organizations and their suppliers because each of them knows that they both meet certain requirements concerning quality system. But ISO do not specify the level of product or service quality rather they specify a set of quality assurance system that must be in place, Finch (2003). Moreover, these procedures describe how operations in an organization must be conducted.

ISO certification does have certain benefits to a given organization. These could be external to the organization or internal to this organization. The internal benefits are related to the process and structure of the organization like improvement in productivity, improvement in efficiency, reduction in cost and waste, better management control and others. Those benefits external to the organizations are: competitive advantage, increase in sale and market share, possible chance of getting into new market, good customer relation and identifying potential customers, increased customer satisfaction and the like. Besides the benefits of ISO certification, there are also certain disadvantages associated with gaining the certificate. Some of the disadvantages are extra cost of obtaining the certificate, increase in paper work load, and no attention for development of personnel.

Moreover, the phenomenal growth in the number of companies attaining ISO 9000 certification worldwide suggests certification will yield benefits to the firm. The benefits appear to have been realized because; the writing is supplied with self identified benefits of ISO 9000 certification. However, whether ISO 9000 certification is associated with more objective measures of performance remains an experimental issue. If ISO 9000 certification is not positively associated with financial performance, it may possibly lose credibility and be regarded as another management fad, Sharma (2005). It is, therefore, conceivable that the self-rated benefits are a self-fulfilling prediction.

Although ISO certification provides both internal and external benefit to a given organization, it says nothing about the performance of those organizations, Singles et al (2000). There is also a scarce study on such area that was investigated whether ISO certification increases the performance of a given organization. With this research, the impact of ISO certification on the performance of an organization was investigated.

### **1.3. Objective of the Study**

#### **1.3.1. General Objective:**

The objective of this study is to examine the impact of ISO certification on companies' performance by relating the constituents used to measure the organizations performance, by considering all brewery companies in Ethiopia, namely Bedele Brewery Share Company, BGI Ethiopia, Dashen Brewery Share Company, Harar Brewery Share Company and Meta Abo Brewery .

#### **1.3.2. Specific Objectives**

More specifically, the study is aimed to achieve the following objectives:

- ✓ To study the impact of ISO 9000 certification on profit before tax of the companies.
- ✓ To study the impact of ISO certification on company results.

### **1.4. Significance of the Study**

A study of ISO 9000 series certification and organizational performance which can be defined in several ways like with the help of performance measures which include profit of the company, sales volume, revenue, production costs, and company result is important for several reasons. First, it is important to understand the impact of ISO certification on organization's performance and help those organizations to decide on whether to implement the program or not. Second, the implementation process may affect the overall organizational setting by changing it into more formalized way of producing goods and services. So this could inform others who think that ISO certification mandate higher product quality. Finally, researchers have been conducting their studies relating to this issue come up with different ideas those that support ISO certification can improve the organizations performance and those who have identified no relationship between the

impacts of certification on the organizations performance. With this regard, this study has added its own importance to the field by investigating the impacts of ISO certification on the performance of companies.

## **1.5.Scope and Limitations**

### **1.5.1. Scope of the Study**

This study is limited to five ISO certified brewery companies in Ethiopia, namely, Bedele Brewery Share Company, BGI Ethiopia, Dashen Brewery Share Company, Harar Brewery Share Company and Meta Abo Brewery. For the study purpose, ten years sales data in birr and quantity; cost of production data and profit data that cover from the year 2002 to 2010/2011 were included.

### **1.5.2. Limitations of the Study**

There could be generalisation of the result that whether certified companies outperform the non certified companies. There could also be other performance indicator for the companies that are not subject to ISO certification.

## **1.6. Organization of the Paper**

The sections of paper are organized in the following manner. This section focuses on the introduction of the research which includes\_ background of the study, statement of the problem, objective of the study, significance of the study, and scope and limitations of the study. The next section deals with review of the literatures and empirical results of prior studies. In the third chapter, research design, method of data collection and analysis were discussed. The fourth chapter deals with results, data presentation, description and statistical tests. The final chapter deals with summary, conclusions drawn from the findings and suggestions to the companies' management.

## **Chapter Two**

### **2. Review of Literature**

#### **2.1.Theoretical Perspectives**

It is claimed that organizations with ISO certification have better performance than those which did not get the certificate. But, still there are other organizations which can compete with those certified companies in terms of the overall performance measures. With these we can say that there is no clear investigation as to how ISO 9000 certification can have an impact on the performance of any organization. But, the worth of a quality system, Harris *et al.* (1969) depends largely on how well people do their job. People are responsible for the success of the system and play the major role in the function it performs.

Additionally, Johnson (1993) stated that the facility with well-designed and well-implemented quality system has a process which tends to be lean, sensitive to customer needs, highly reactive, efficient and positioned at the leading edge of its market place. In this sense we can think of how much ISO certification is important for the performance of an organization. In general, it is assumed that ISO certification can improve the performance of the organization though there are some others who do not agree with this premise.

Being this is the case and though there are a multiple of studies in the field of quality management, there is still a gap on how ISO certification have an impact on the performance of an organization. This literature is, therefore, believed to include the impact of ISO certification on organizations performance.

## **2.2. Quality Management System(QMS) Standard ISO 9000 series**

The ISO 9000 Quality Assurance standard was first initiated to overcome trade barriers. Manufacturers saw this as an opportunity to open doors for global business. However, the main focus of the 1987 and 1994 standards was on external factors such as customers. In majority of cases, the implementation of these standards brought about little or no improvement internally. Based on customer need, ISO 9001:2000 standards is provided to take its leverage to meet up with the challenges of the new and constantly changing economy, Padmadinata (2007.)

The author also stated that in addition to the conceptual changes towards Quality Management and redefining the approach to quality, the new standard takes into consideration the following quality management principles: Customer focused organizations that require the organization to satisfy their clients' needs in order to remain competitive; Leadership which requires the leaders of the organization to establish unity of purpose, direction and internal environment of the organization. Involvement of people which sets a condition for the organization that people at all levels are the essence of an organization; process approach, requiring the organization to manage its activities and resources in a process in order to achieve its objectives more efficiently.

System approach to management requires the organization to identify, understand and manage a system of interrelated processes to achieve a given objective, contributing to the impactiveness and efficiency of the organization. Factual approach to decision making that requires the organization to use logical and intuitive analysis of data and information obtained from the field to enable the organization to make impactful decisions. Continual improvement, the organization must establish continual improvement as a permanent and

on-going objective. Mutually beneficial supplier relationship, the organization is required to promote mutually beneficial relationship with suppliers for enhancing the ability of the organization and its suppliers to create value.

As indicated in the same source, general requirements for the organization who will implement the QMS standard are: The organization shall establish, document, implement and maintain a quality management system and continually improve its impactiveness in accordance with the requirements of this International Standard. The organization shall also identify the processes needed for the QMS and their application; determine the sequence and interaction of these processes including the criteria and methods needed to ensure both the operation and control of processes are impactful. Ensure the availability of resources and information as necessary; the organization shall monitor measure and analyze these processes; and the organization shall implement actions necessary to achieve planned results and continual improvement of these processes.

Moreover, to get certification as a proof of the organization that has fully complied the standard, several procedures should be taken, which are:

1. ISO 9000 Assessment. The initial assessment is a detailed review of the company's quality systems and procedures compared to ISO 9000 requirement. This process defines the scope of the ISO 9000 project.
2. Training. All employees must be trained in two areas. First, they must have an overall understanding of ISO 9000 vocabulary requirements, the role of the quality manual and the

benefits that will be derived from the system. Second, they must understand the actual day to day process of upgrading and improving procedures.

3. Documentation of work instruction. All procedures must be described and documented so that they can be understood prior to approval. Once completed, this document should outline every process a company undertakes that affects the quality of its finished products.

4. Quality Assurance Manual. While ISO 9000 standard does not require a Quality Assurance and policy manual, they do require that a company document everything it does and every system that affects the quality of the finished product. The manual is often used to assemble all documents in one place.

5. Registration Audit. The final step in certification is an audit by an organization chosen as external registrar to see that the system is working as described in the Quality Manual and that meets ISO 9000 requirement.

### **2.3. The Motivation for Implementing ISO 9000**

Firms are motivated to implement ISO 9000 for several reasons. Singles et al (2000) described that organizations that are involved in quality management out of an internal motivation, such as improving their organizational structure, improvement of their competitive position, improvement of their running and trading results, etc., profited most in terms of performance outcomes. The main reason companies have had for implementing the standard has been pressure or demands from customers; the improvements certification makes to the company image is the second most important reason why companies obtain certification.

Moreover, the motivation for ISO 9000 implementation is often claimed to be a significant factor for business success which could be external reasons such as, marketing advantages, customer expectation and competitive pressures, instead of internal reasons such as improving the quality of products and services, Feng *et al.* (2008). However, more recent research indicates that manager's motivation for seeking ISO 9000 certification has shifted significantly from external to internal reasons. For example, market related reasons for certification do not rank high as motivators to gain ISO 9000 certification, Feng *et al.* (2008). Companies which seek ISO 9000 certification for external reasons are likely to fail or gain fewer benefits because of their narrow focus. On the other hand, companies that seek certification to improve their quality of products and services tend to gain greater benefits from the ISO certification process.

## **2.4. Impact of ISO Certification**

Jackson and Ashton (1995) described ISO 9000 as an international standard for quality assurance, recognized throughout the world. ISO certification stands for certain minimum quality standards that organizations should meet, and is said to assure a consistent quality of products, services and processes, Singles *et al.* (2000).

Singles *et al.* (2000) also stated that ISO 9000 standards help to ensure that organizations follow specific well documented procedures in making of their products or services, and nothing more. These procedures describe how operations in an organization must be conducted. By doing this, organizations will have consistent product or services that are offered to the customers. If the products or services are consistent and meet customer specifications, then the organization will benefit from ISO certification.

These benefits, Cagnazzo *et al.* (2009), could then be those that are internally impact the performance of the organization or those that can externally affect the organization. Among the internal impacts of ISO 9000 certification impacts on competitiveness, management and team working, financial performances will be discussed next and followed by external impacts, such as impacts on market, customer and impacts from or on suppliers will be discussed latter in this section.

## **2.4.1. Internal Impacts**

### **2.4.1.1. Impacts on the Quality System**

Cater *et al.* (1995) described that, ISO 9000 certification provides a structure around which build a program of world class quality. This formal structure has the peculiarity of being verifiable and measurable. This formal system of quality guarantees the improvement of all aspects within the company that ensure the quality of the product or service to the customer. From technical point of view, Santos and Escanciano (2002), a greater rationalization of the process is obtained. Thus, on analyzing and documenting the firm's different procedures, any possible deficiencies may be detected and remedied, and a large number of situations in which efforts are duplicated may be eliminated.

Cagnazzo *et al.* (2009) also indicated that ISO 9000 certification and audits allow companies to constantly update and control their quality systems. In particular, the quality managers should be committed to quality; should regularly review the quality system; ensure that quality system is continually improved; and use the internal quality audits to assist in evaluating the impactiveness of the quality system.

### **2.4.1.2. Impacts on Product/Service**

Helmi (1998) stated that "the most important factor affecting performance is the quality of products and services relative to those of the competition, there is a direct relationship between customer satisfaction and profitability". Quazi and Padibjo (1998) described this aspect, supporting that ISO 9000 facilitates the improvement of the product quality as well as the satisfaction of customers' requirements. Casadesus and Jimenez (2000) highlighted other aspects in which the standard has had positive influences are: the possibility of

improving the level of delivery time, the consequential savings in production cost and finally the reduction of lead time. One of the major significant improvements reported as an influential impact coming from the ISO 9000 is related to the improved product/service quality (Brown, et al. (1998) cited in Cagnazzo *et al.* (2009)).

Ussahawanitchakit and Tansuhaj (2004) noted that by standardizing the ISO 9000 program structured and detailed procedures provide a deeper understanding of the processes involved in the supply of product or service. A better process through written procedures and instruction will reduce variability of the product. Marketing impactiveness is a concept directly linked to ISO 9000 adoption. As a quality management system, ISO 9000 is concerned with improving the quality of product and services.

The authors also described that high quality products and services enable firms to achieve higher customer satisfaction and gain a greater competitive advantage. For instance, firms adopt ISO 9000 because of a concern over customer expectations and satisfaction, and a desire to meet customer needs and requirements. ISO 9000 adoption influences firms to improve the quality of information in finance, operation, management and marketing. It encourages them to create business networks, increase operational efficiency, and achieve business excellence.

### **2.4.1.3.Impacts on Competitiveness**

Firms are moving toward ISO 9000 registration because of competitive threats. At this time, most of the pressure is not in the nature of requirements or competitive threats. Rather, it is commercial pressure arising simply from stiffening international competition and the needs of firms everywhere to differentiate among their suppliers, Johnson (1993). It was also found that good quality control and improved conformance quality was related to competitive advantage. An impactful quality management system will have process control as an essential activity, Heras et al (2002). Cagnazzo *et al.* (2009) added that another factor promoting the ISO 9000 series is the desire to improve internal efficiency by reducing waste and non-value added tasks. The ISO 9000 series is seen as tangible and has meaning and that forces organizations to develop manuals and procedures and improve organizational discipline.

Generally, firms need to outperform their competitor in their product market. In order to sustain competitive advantages, firms also need to continuously increase value and prevent competitors from copying their advantages. Various previously conducted research have identified that there are two distinct competitive advantages: low cost and differentiation. The differentiation advantage includes quality, features, delivery, follow-up service, ease of use and so on. Cost reduction and customer satisfaction are, therefore, the main objectives of quality management. These outcomes lead to cost leadership and differentiation advantages.

#### **2.4.1.4. Management and Team Working**

Quality system and ISO benefit the firm in terms of better management approach, particularly through a wide participation which should be part of an impactive system. Jackson and Ashton (1995) described that a good system requires such staff involvement at the implementation stage. Added to this, a quality system is in many ways designed to stabilize\_ to ensure methods which are recognized to be impactive are followed consistently.

Jackson and Ashton (1995) also summed up the management benefit of quality system with the phrase 'due diligence'\_ to describe that a management system designed to catch problems before they happen should at least reduce the chance of problem to arise and may provide grounds for resisting claims or action. That is, the defence that due diligence was exercised.

The benefits of ISO certification emerges from the human resource environment. Santos and Escanciano (2002), these benefits are manifested through an increase in internal efficiency, and an improvement in the work environment. This favours employee participation in the firm's management and the attainment of the common objectives: quality management.

Dowlatsahi and Hooshangi (2010) stated that employee involvement is a prerequisite for developing quality systems, processes, and procedures consistent with ISO requirements. As an example, documentation of quality activities requires direct employee involvement. Without a certain degree of employee involvement and cooperation in any given organization, the implementation of certain aspects of ISO certification requirements would not be feasible.

### **2.4.1.5.Impacts on Financial Performance**

Most writers describe that the impact of ISO 9000 on financial performance is a potential sources of debate. A study conducted by Van Der Wiele *et al.* (2000) justified that there is no clear relationship between having ISO 9000 series certificate and the financial performance of an organization. This is mainly due to the reason that ISO 9000 focuses only on how organizations reduces their costs through minimizing the inspection time, detecting the quality problem early at the production level and the time spent for call backs. ISO also requires the tasks to be performed as per the stated procedures. But, in general, ISO certified companies have more access to new markets and can control the existing markets which in turn can improve their financial performance. These improvements could be described by the common financial indicators as return on assets (ROA) and return on sales (ROS).

Pinar (2001) added that the ISO 9000 had the most immediate and substantial impact on productivity/efficiency, profitability and cost factors. This might suggest that these were the main factors influencing the belief or perceptions of the firms regarding ISO 9000 success. Corbett (2002) supplemented that firms that decided to seek ISO 9000 maintained their ROA, while the non-certified firms saw their performance decline over time.

Sharma (2005) provided the evidence that ISO 9000 certification is associated with improvements in financial performance. His results revealed that ISO 9000 certification does bring benefits to the firm and its stakeholders. Profit margin, growth in sales, and earnings per share are among the significant improvements observed as a result of ISO 9000 certification. However, the impact of ISO 9000 certification was greater on profit margin than on growth in sales which suggests that the improvement in overall performance is attributed largely to improvements in internal business processes.

Moreover, Capistrano (2008) obtained that majority of ISO 9000 certified firms experience less fluctuation in their financial ratios after certification and most firms showed improvements in their leverage ratio. But, the author identified that the financial ratios that are perceived to supposedly have more direct impact due to certification –operating efficiency and asset use efficiency because of its association with TQM – have less significance in the study.

## **2.4.2. External Impacts**

### **2.4.2.1.Impacts on International Trades**

The adoption, around the world, of the quality standard ISO 9000 has provided a common ground for the assessment and measurement of the suppliers in order to bring down one of the barriers to international trade. Therefore the standard ISO 9000 becomes a distinct advantage in a national and international trade, Cater *et al.* (1995). ISO 9000 certification has three important benefits for businesses. First, it is required for health, safety, and environmental products sold in the European Community. Second, more and more customers are requiring ISO 9000 certification as a prerequisite for doing business. Third, many companies see ISO certification as a way to show their customers how they stand out from their competitors, even if ISO 9000 is not required, Masternak and Kleiner (1995).

### **2.4.2.2.Impact on Market**

The benefit of ISO certified company is that it enables them to retain their existing markets, Johnson (1993). Additionally, having a formal quality system and being assessed to a recognized standard communicates a certain commitment to quality and, therefore to meeting customer requirements, Jackson and Ashton (1995). Market access is facilitated

when the implementation of international quality standards results in the increased confidence of economic agents or regulators. Entering new markets and establishing subsidiaries is facilitated if organizations have already voluntarily conformed to potential requirements by showing good practices and overcoming technical barriers to trade.

Marketing activities are facilitated because purchasers and clients may be more easily convinced of the quality of products and services. For example, in the chemical industry most suppliers and purchasers place great importance on quality and safety. Product price may even increase as a result of enhanced confidence of clients. A more flexible response to market demands is created through the internalization of the concept of consumer satisfaction that may be initiated by the ISO 9000 quality system. Through the establishment of procedures concerning impactive design and production, product variety and monitoring of market performance and competitors, a company will take better advantage of market opportunities, Schuurman (1997).

Santos and Escanciano (2002) described that companies will attain the development of a more adequate commercial offer for their customer needs, which implies a marked increase in customer satisfaction and loyalty, and greater opportunities appear in the access to new markets as a result of the improvements in the commercial management. And also there is an increase in market participation and the firm acquires a strong image.

Moreover, as Cagnazzo *et al.* (2009) identified, the company that get ISO certification may help them in gaining access to the market and the faster reaction to the market request. The fact that ISO 9000 series certification can lead to gain access to markets, and some of the benefits of certification can be summarized as: one important marketing implement which

helps market relations, increases the possibility of obtaining new contracts and considerably helps to enter new or international markets. These are sources of performance improvement from adopting the ISO 9000 program arises from increases in revenue as ISO 9000 certified firms are able to access new markets.

#### **2.4.2.3. Impact on Customer**

At the heart of an impactful quality system is the desire to meet customer needs as fully as possible and various mechanisms built into the system help to ensure this is achieved, Jackson and Ashton (1995). Customer satisfaction is a broad concept that includes perceived evaluation of product and service. From the process approach of ISO principles, there is great potential to use it in operationalizing marketing. Working toward a process that will bring TQM and marketing together to deliver a customer focus will require changes in the way that marketing is thought of and organized, Piskar (2007). Moreover, according to Cagnazzo *et al.* (2009), adoption of ISO 9000 system yields visible and concrete benefits to organizations in the form of increased customer satisfaction.

#### **2.4.2.4. Impacts from or on Suppliers**

ISO 9000 impacts the suppliers in two aspects: the first is the impact or benefit they gain as a result of certification and the second one is the benefit they derive from the supplied company. In the first case, the ISO standards are internationally accepted and designed to assure the supplying organization has achieved the required level of quality standards and documented their quality management system. Secondly, the supplier related standards are fulfilled and therefore there is an increased interest toward the certified supplier company which leads improvement of the company. More generally, Davis (1997) specified that

suppliers have found that certification improved their image, increased export possibilities and overall competitiveness, and contributed to their ability to maintain their market position.

Cole (1998:68, cited in Terlaak and King, 2006, p, 4) suggests that firms may make ISO 9000 “their primary instrument for signalling quality to their customers”. The need for information about underlying supplier attributes lends further credence to the idea that ISO 9000 certification may act as a market signal. A central difficulty in supply chain interactions is the identification of high quality suppliers.

However, Terlaak and King, (2006), buyers often have difficulties identifying (ex-ante) suppliers that provide consistent product quality, because the suppliers’ underlying quality attributes are difficult for buyers to observe. This is because such attributes often are complex, embedded, and difficult to measure. As a result, some buyers have demanded that their upstream supply partners adopt ISO 9000 to reveal their otherwise difficult to observe attributes.

The authors also stated that, even without buyer pressure for certification, suppliers may seek certification to communicate about underlying quality attributes. If buyers are unable to tell apart high quality suppliers from low quality ones, they may shift demand to substitute products or else pay an average premium to all suppliers. Consequently, if certification with a management standard allows an organization to communicate about its unobserved quality attributes, a certified organization may be able to gain an advantage vis-à-vis its non-certified competitors.

#### **2.4.2.5. Impact on Stakeholders**

Sharma (2005) described that ISO 9000 certification does bring benefits to the firm and its stakeholders. The use of ISO certification is associated with an increase in financial performance that brings benefit to stakeholder, Cagnazzo *et al.* (2009). The authors also stated that the positive impact of ISO 9000 certification on a firm's success is even reinforced in a situation where firms otherwise suffer from reputation problems. Firms based in an environment associated with low quality, which show their compliance with widely accepted quality standards, should have proportionately higher resource inflows than firms which are located in an environment of firms which are considered to produce high quality. If trust in the quality of a firm's product has already been established, ISO 9000 certification should result in a lesser amount of additional legitimacy and resource inflows than the certification of a firm for which this certification means a great shift in the trust of stakeholders.

## **2.5.ISO 9001 Certification and Food Standards**

Besides Quality Management System Standard, there is standard particularly for enterprise which produce food or medicine which is HACCP (Hazard Analysis and Critical Control Point), Padmadinata (2007). Hazard Analysis and Critical Control Point (HACCP) is a systematic approach to identifying and controlling hazards (i.e. microbiological, chemical or physical) that could pose a danger to the preparation of safe food. HACCP involves identifying what can go wrong and planning to prevent it. In simple terms, to control the safety of ingredients and supplies coming into a food business and what is done with them thereafter.

A well-implemented management system such as one using the ISO 9001:2008 international standard principles dealing with quality management systems, the HACCP norm, and the ISO 14001:2004 environmental management standard, will minimize occurrences of product-in-process being reworked or rejected and finished product being scrapped. This minimal occurrence affects the beverage companies to perform well when they implement such systems.

According to Asian Productivity Organization (2005), all new and promising concepts including HACCP have a greater chance of adoption when the benefits are quantified and presented in monetary terms. As business basically revolves around money no amount of persuasion depending upon social responsibility, statutory obligation and public health would succeed in convincing the SMEs to implement HACCP. This means HACCP campaigns with a judicious mix of technical and financial advantages can penetrate SMEs at a faster rate than the conventional ones. A coherent and proactive policy is perhaps the most

critical factor that separates the success of HACCP from failure. The government's commitment sends the right signals to the food industry about the implementation of HACCP. Moreover, attracting international agencies like United Nations for Industrial Development Organization, World Health Organization and Food and Agricultural Organization in a big way may also help the cause of SMEs in expediting the implementation of HACCP.

Moreover, the source also indicating the HACCP system which is equally important with ISO 9001, which is science-based and systematic, identifies specific hazards and measures for their control to ensure the safety of food. HACCP is a tool to assess hazards and establish control systems that focus on prevention rather than relying mainly on end product testing. Any HACCP system is capable of accommodating change, such as advances in equipment design, processing procedures or technological developments.

Inspection Body for Medicine and Food had announced that they established Integration Food Safety System which covers three networks: Food Intelligence, which assess food safety risk; Food Safety Control, which monitors food safety; and Food Safety Promotion, which disseminates food safety. Food safety is attracting increased attention, not only because of its implications for domestic public health, but also in meeting the continuing challenge of international market access and competitiveness, Padmadinata (2007). Additionally, a study by Mulili (2011) provided evidence that ISO certified East African Brewery Limited has consistently improved their profitability over the period between the year 2001 and 2007. TQM implementation is therefore positively correlated with profitability in these companies.

Inspection Body for Medicine and Food has announced the scheme for treating food enterprise quality system implementation with star marking. One star indicates that the enterprises has been trained and implement the food safety principle; Two stars indicate that enterprise has implemented Good Practice for food processing; Three stars indicate that enterprise has implemented HACCP standard; Four stars indicate that enterprise has implemented Quality Management System standard (ISO 9000).

In general, the food safety management system is needed for the companies that engaged in such businesses. Thus, beverage companies, including brewery companies, should comply with the international quality standards that certify their products are safe for human use. As the companies are operating in accordance with this standard their customers consume that product.

## **2.6. Empirical Literature**

Various studies have been conducted to identify the impact of ISO certification on the performance of companies. Accordingly, the synthesis of these studies is presented as follow.

### **2.6.1. Impacts of ISO 9000 Certification on Production Process**

One of the areas where ISO certification can affect is the company's production process. Gotzamani and Tsiotras (2002) reported that ISO certification had improved the companies' quality of products and services as a final goal and improved their internal processes. Analysis of Terlaak and King (2006) suggested that facilities that are ISO certified have a greater increase in production volume subsequent to certification than non-certified facilities.

Feng et al (2008) found that there is a significant positive relationship between ISO certification and operational performance. But, the relation was weak for organisational performance. Kuo et al. (2009) reported that ISO certification does bring a significant improvement on the level of quality performance. The study by Wu and Liu (2010) identified that ISO certification had a significant impact on internal operating processes of a company. Among the internal processes it improved processes standardization and systemisation.

## **2.6.2. Impacts of ISO 9000 Certification on Customer Satisfaction and Company Results**

Heras et al (2002) identified that ISO certified firms are enjoyed greater sales growth than those not yet certified. The results of Dimara et al. (2004) indicated that firms obtained their ISO certificate have significantly reduced their cost and showed improvement on their markets.

The study by Sharma (2005) discovered that ISO 9000 certification does bring benefits to the firm and its stakeholders. Profit margin, growth in sales, and earnings per share are among the significant improvements observed as a result of ISO 9000 certification. However, the impact of ISO 9000 certification was greater on profit margin than on growth in sales which suggests that the improvement in overall performance is attributed largely to improvements in internal business processes.

Piskar (2007) identified that organisations with systems certification have insignificant impacts on their sales and profitability. The author also reported that ISO certification does have a positive impact on customer satisfaction and they are less loyal to the company as they compare the prices of the company with the competitors. Wu and Liu (2010) also identified that ISO certification has significantly affected the financial perspective of the company performance of profitability. Their result also showed that ISO certification had a significant impact on improving customer satisfaction.

### **2.6.3. Impacts of ISO 9000 Certification on Employee Motivation and Documentation of Processes**

The results of Ragothaman and Korte (1999) indicated that there is an improved documentation system caused by ISO certification. Companies have improved their documentation of products and processes that have an increased efficiency and reduction of the associated costs.

Employee training and quality aspects philosophy, Feng et al. (2008), are the two critical factors identified in the process of ISO 9000 certification. As employees were skill training on the implementation of ISO 9000, they contribute for the long term organizational performance. In general, ISO certified companies are enjoying the results obtained from ISO certification.

In summary, there are several studies which had been conducted and most of the studies are those in the developed countries. These studies generally tried to investigate the impact of ISO certification by dividing it into those internal to the organization and those external to the organization. In general, according to the above literature one can conclude that there is still a need for further studies and this study will fill the gap in the area particularly to my country, Ethiopia.

### **2.7. Research Question**

Up on review of related literatures, the research question is therefore designed as: Does ISO certification has a positive impact on companies' performance?

## Chapter Three

### Methodology

#### 3.1. Research Design

The purpose of this study is to investigate the impact of ISO certification on the performance of an organization. With this respect, the researcher has drawn a conclusion whether ISO certification has a potential influence on the performance of the companies.

For the study purpose, from the beverage industry, Brewery Companies were selected. Accordingly, all the Brewery Companies currently operating in Ethiopia were included and a survey of their financial data has been obtained from the Central Statistical Agency of Ethiopia that covers the period of ten years starting from the year 2002 to the year 2010/2011.

Performance measurement systems that could be used in production, Anh and Matsui (nd), could be *Quality-based measure, Time-based measure, Cost-based measure or Flexibility based measures*. Among these performance measurements, financial performance measure which is cost based measure is employed.

Financial data are preferred to those non financial primary data that could be collected with the help of questionnaire or interviews, because they overcome the individual biases that could encounter at the time of responses. Moreover, there could be personal judgements while responding to each item preferring their respective company. So, the use of secondary data of these companies helps to minimise the rate of bias.

The core importance of selecting a brewery accompanies is that it can provide a better information about the subject under consideration and their performance can also be affected by the word that ISO certified companies provide better quality products to their customers which could in turn lead to frequent consumption of the same brand. Additionally, using data from a single industry also helps for better control of heterogeneity and avoid other complications inherent in inter-industry analysis.

The study has investigated the state of performance of the companies after the certification. For the investigation purpose, according to the Quality and Standards Authority of Ethiopia, among the certified beverage companies in Ethiopia, the researcher has selected five certified brewery companies. These include Bedele Brewery Share Company, BGI Ethiopia, Dashen Brewery Share Company, Harar Brewery Share Company and Meta Abo Brewery.

### **3.2.Data Type**

In order to undertake this study, business data of five brewery companies that are currently operating in Ethiopia which covers the period of ten years starting from the year 2002 to the year 2010/2011 is collected. The data is obtained from the Central Statistics Agency of Ethiopia. Thus, the data includes those financial business surveys of the companies before ISO registration and after ISO certification.

### 3.3.Data Collection Instruments, Variables and Materials

In order to undertake the study, each company's operational activity data of the last ten years starting from year 2002 to the year 2010/2011 were included for analysis. The variables are the company's annual sales both in quantity and birr value, annual costs which are used as an independent variables including ISO certification as a dummy variable. Annual profit is therefore applied as a dependent variable to describe the performance of the companies.

### 3.4.Model Specification

The performance of the companies under consideration is formulated as a function of major important variables. The model is developed in line with the work of Naser *et al.* (2004) and the work of Levine and Toffel (2008). Accordingly, the model specified is the following:

$$\ln\text{PROFIT}_{it} = \beta_0 + \beta_1 \ln\text{SALES}_{it} + \beta_2 \text{REV}_{it} + \beta_3 \text{COST}_{it} + \beta_4 \text{ISO}_{it} + \varepsilon_{it}, \quad \varepsilon_{it} = \mu_i + v_t$$

Where, PROFIT is the company's profit which is used as a measure of its performance. SALES represent the annual sales volume whereas REV and COST denotes average revenue and average cost of production. ISO is a dummy variable taking a value of one after the companies become ISO certified and a value of zero before they were ISO certified. The subscript 'i' represents the cross-section(the companies) and 't' refers to time. Finally,  $\varepsilon_{it}$  is the error term composed of individual impact ( $\mu_i$ ) and time impact ( $v_t$ ) and 'ln' is the natural logarithm of the variables. Natural logarithm is preferred to the levels in order to reduce the influence of outliers and to compensate for the difference in scale of measurement.

The model specified is the panel data of five brewery companies over a period of ten years. It is estimated using ordinary least squares (OLS) estimator. In this case, the significance of each coefficient of the explanatory variables is tested using the usual t-test or p-value where

as the joint significance of the coefficients is tested using the F-statistic. In addition, the overall explanatory power of the included regressors is checked employing the R-square ( $R^2$ ) value.

In addition to regression analysis descriptive statistics is applied to compare the mean value of each company's operational activities.

## Chapter Four

### Results and Discussion

#### 4.1.Data Description

The descriptive statistics of the major variables reveal that the companies have jointly experienced a mean profit of 275327909 birr and ranges between a minimum profit of 43982674 birr and a maximum profit of birr 2037936740.

Table 4.1: Descriptive Statistics of Major Variables

	Variables			
	Profit	Sales	Average Revenue	Average Cost
Mean	275327909	34911760.19	19.30458	11.24421
Maximum	2037936740	280012394	261.889	124.9354
Minimum	43982674	174747	2.4	0.572458

The mean average revenue of the companies over the ten years under consideration is 19.3 birr with a minimum value of birr 2.4 and a maximum value of 261.89 birr. The mean average cost of the companies is 11.24 birr with a minimum cost of birr 0.57 and a maximum cost of birr 124.94. Finally, the company's sales volume has a mean of 34911760.19 litres with the minimum volume of 174747 litres and a maximum volume of sales of 280012394 litres.

#### 4.1.1. Trends of the Companies' Sales and Profit

Descriptive statistics of the companies' operational activities is described with the help of the following table. Each company have experienced different trends of business.

Table 4.2: Descriptive statistics of company operation before ISO certificate

	Variables			
	Profit	Total Sales	Average Revenue	Average Cost
Mean	107010969.5	41089629.26	4.660822	8.654329
Maximum	344047834	280012394	133.33	124.9354
Minimum	43982674	174747	2.4	0.71037

Taking the companies operational activities before ISO certification, there are several changes observed over the years under consideration. Before ISO certification the companies have jointly an average profit of 107010969.5 birr with the maximum value of birr 344047834 and the minimum profit value of birr 43982674. The companies also have a total sales unit of 41089629.26 liters of beer with a maximum value of 280012394 liters of beer and the minimum sales unit of 174747 liters over the period under consideration.

The companies do also have mean average revenue of birr 4.660822 with maximum and minimum average revenue of birr 133.33 and 2.4 birr respectively. Finally, the companies have a mean of average cost of birr 8.65 with a maximum average cost of birr 124.94 and a minimum average cost of birr 0.71.

**Table 4.3: Descriptive statistics of company operation after ISO certificate**

	Variables			
	Profit	Total sales	Average Revenue	Average Cost
Mean	491735402.7	26968785.67	14.87713	14.57406
Maximum	2037936740	140936772	261.889	36.21505
Minimum	90964455	230878	1.13	0.572458

When we look at the operational activities of these companies after they are certified for ISO 9001, one can identify the following properties. The mean profit of the companies is birr 491735402.7 with a maximum profit of birr 2037936740 and a minimum profit of 90964455 birr. The mean total sales quantity of the companies after they were certified for ISO is birr 26968785.67 and have a maximum sales quantity of 140936772 liters and a minimum sales of 230878 liters.

Taking average revenues and average costs of the companies after they are certified for ISO 9001, the mean average revenue is birr 14.88 and mean average cost is birr 14.57. The maximum value of average revenue is birr 261.89 and the minimum value is birr 1.13. The maximum value of average cost of the companies over the period is birr 36.25 and the minimum value is birr 0.57.

**Table 4.4:** Mean Difference of Major Variables

	Variables			
	Profit	Total sales	Average Revenue	Average Cost
Mean diff.( After ISO less Before ISO)	384724433.2	(14120843.59)	10.21631	5.919735

When we compare the mean of these companies with respect to the time before ISO certification and after ISO certification, we can see that there is a significant change on the profit side of the companies. The mean difference of the profit of the companies is birr 384724433.2. This indicates that the impact of ISO certification is visible on improving the profit that each company generate. This in turn shows that as the companies' profit increase their performance also increases which could be described in terms of financial performance.

Added to this impact, the mean sales unit of the companies have reduced when compared to the time before ISO certification, which could indicate that the companies are selling their products at an additional price to increase their revenue. There is also a significant change on average revenue of the companies as the difference is a positive figure. However, the companies have incurred extra costs when compared to before the certificate.

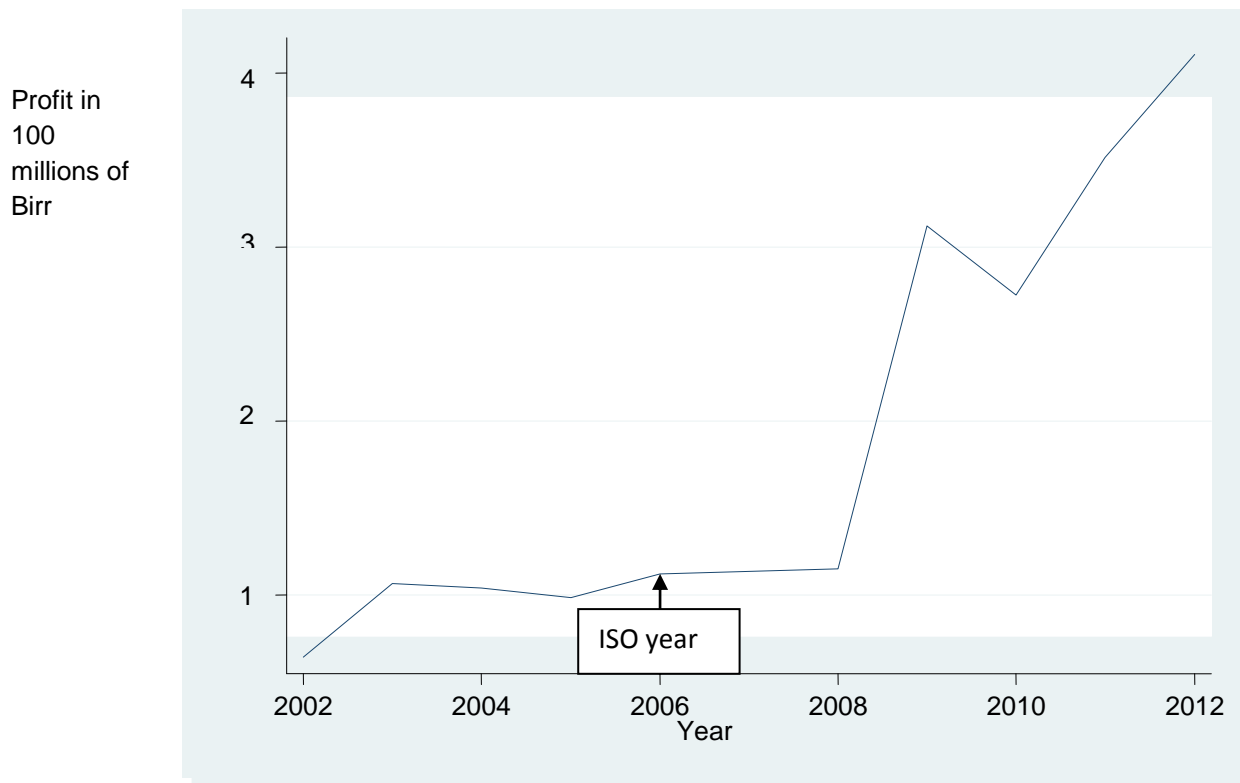


Figure 4.1: Distribution of Profit of Company 1 over the years 2002 to 2010/11.

The trend of the company's performance taking profit as an indicator shows that the company has a slight increase before the year it was certified for ISO 9001. However, in the subsequent year, the profit of the company have boosted at an increasing rate than before. Thus, we can state that ISO certification has a positive impact on this company's performance.

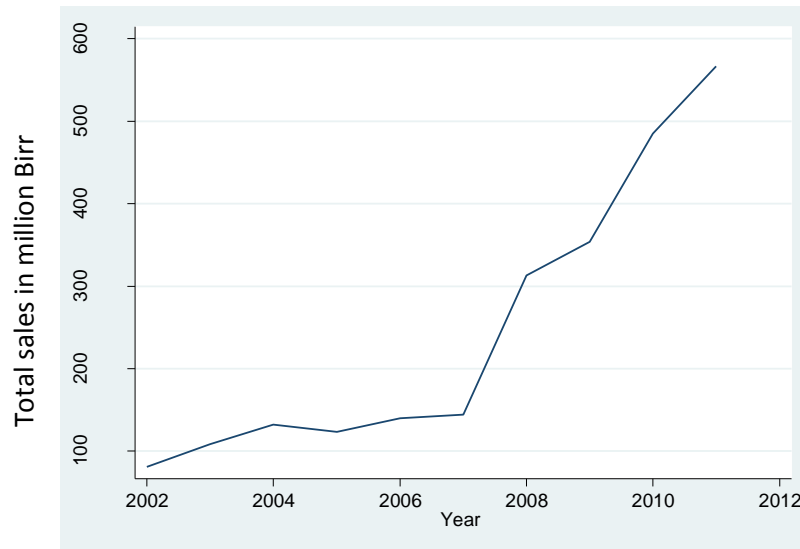


Figure 4.2: Distribution of total sales of company 1 over the period under consideration.

The company's sale prior to ISO certification was limited to the level below 200 million birr. However, after the year of ISO certification it has reported to increase the sales amount by doubling itself. Even in the subsequent years, the company's sales amount was more than a triple of at the time of the certificate. This is mainly due to the reason that companies could have access to foreign markets and the customers' willingness to consume the same brand. Thus, these lead the company to perform better than the periods before the certificate.

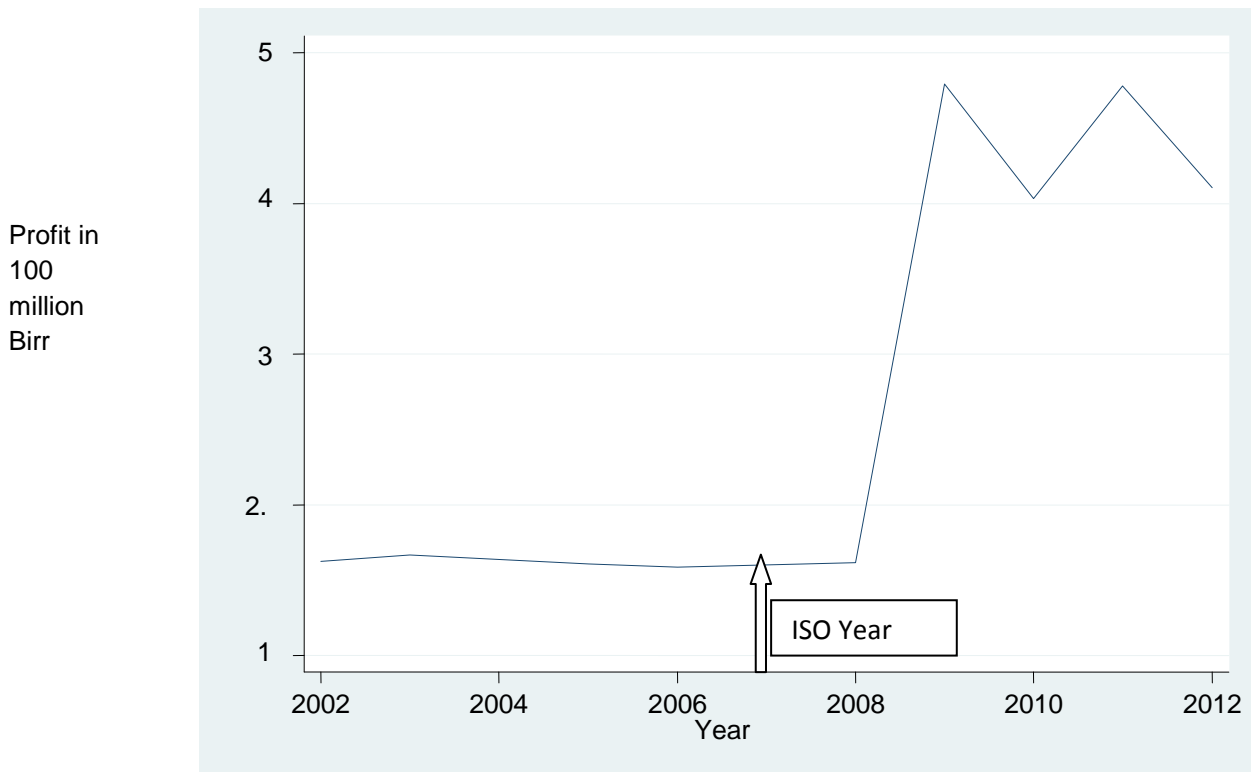


Figure 4.3: Distribution of Profit of Company 2 over the years 2002 to 2010/11.

The distribution of profit of company 2 for the periods before ISO 9001 certificate was of the same type or stagnant without improvement over the time under consideration. However, the year thereafter, the company's profit has increased dramatically showing a triple increase when compared to that of before the certificate. This, therefore, shows an improvement on the company's performance which resulted from ISO certification.

The companies are requiring having such certificate in order to improve their performance. Their performance, therefore, can be enhanced with the help of ISO certificates and the contribution of each element in the company. To better perform in the given industry, the companies are also required to sell their products at a reasonable price and generate the revenue that can cover the operational costs of the company and add to its profit. In this manner, the role of ISO 9001 certificate is vital.

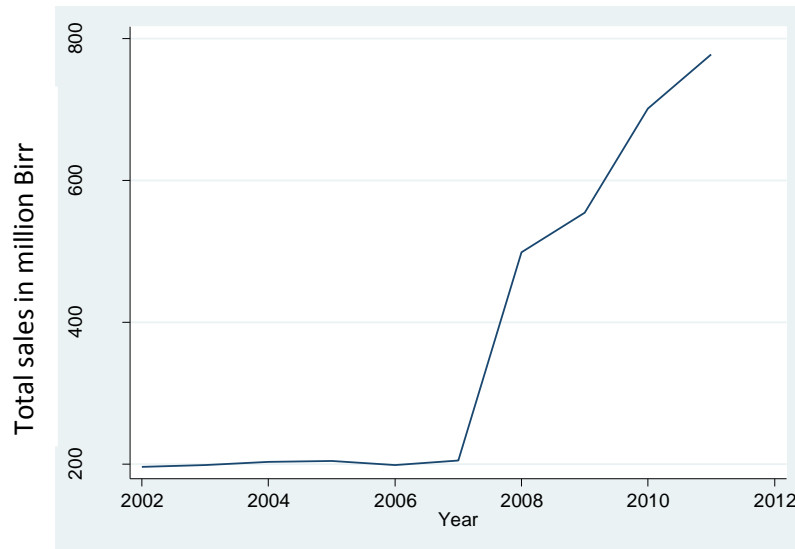


Figure 4.4: Distribution of total sales of company 2 over the period under consideration

From the figure it is possible to judge the importance of ISO 9001 certificate in enhancing the company's sales. The company has experienced a slower growth rate of sales in the periods before ISO certification. During that time the market for this company's product is only the domestic consumers. However, after having ISO 9001 certificate, which could help the company as a pass port, the company can start to export its products to foreign markets. This export in turn can increase the total amount of sales for this company that in its part add to the profit that could be made. ISO certification is therefore improved this company's sales performance which contributed to the profit of the company.

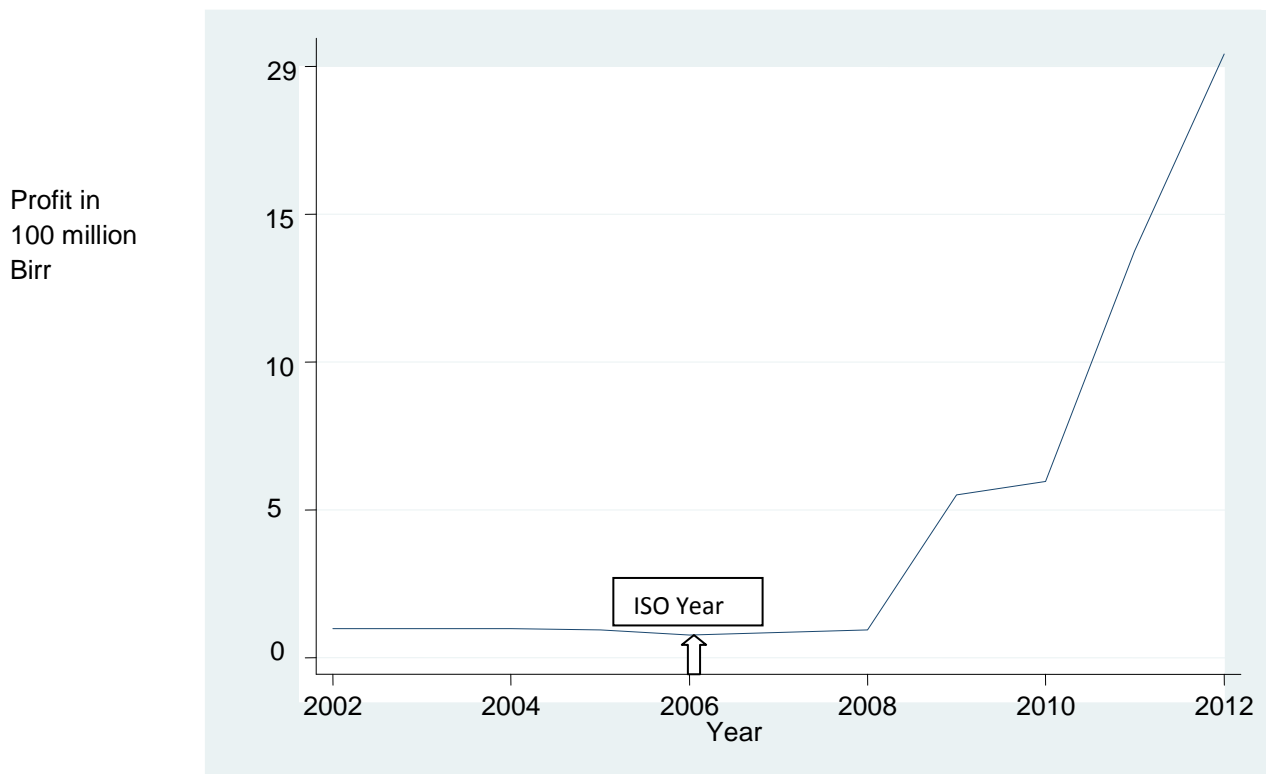


Figure 4.5: Distribution of Profit of Company 3 over the years 2002 to 2010/11.

The trend of profit distribution for Company 3 over the period before ISO certification was not changing over the years. That is, the company experienced no improvement on its performance taking Profit as an indicator. However, two years after the company is certified for ISO 9001, it has reported an increased amount of profit. The profit of this company was increased at increasing rate after two years of its operation having ISO 9001 certificate.

However, after four years of the period since it was certified for ISO 9001, the companies profit was significantly increased at alarming rate than even the previous years. So, this increased profit level is the result of ISO certificate which could also add its importance to the increased level of the company's sales amount. Moreover, as the sales amount of the company increased at alarming rate, the company's profit also boost at the rate that can support for the overall company's asset level.

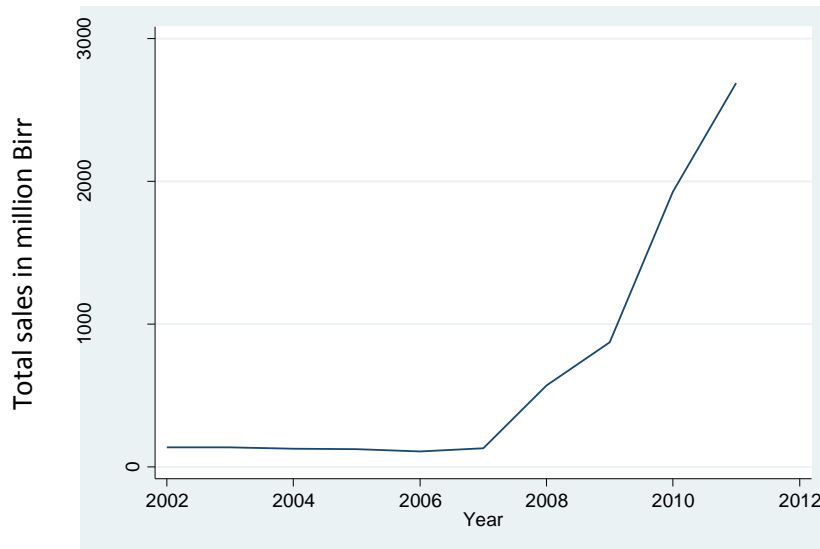


Figure 4.6: Total sales distribution of company 3 over the year 2002 to 2011.

The sales distribution of the company over the ten year period was experiencing different states of performance. The performance of the company in terms of sales for the period before the certificate was at the level below half a billion of birr. However, about two years later the company's sales volume amounted to one billion of birr. The year thereafter, the company's sales amount was doubled itself and even approached to a triple of the time of the certificate.

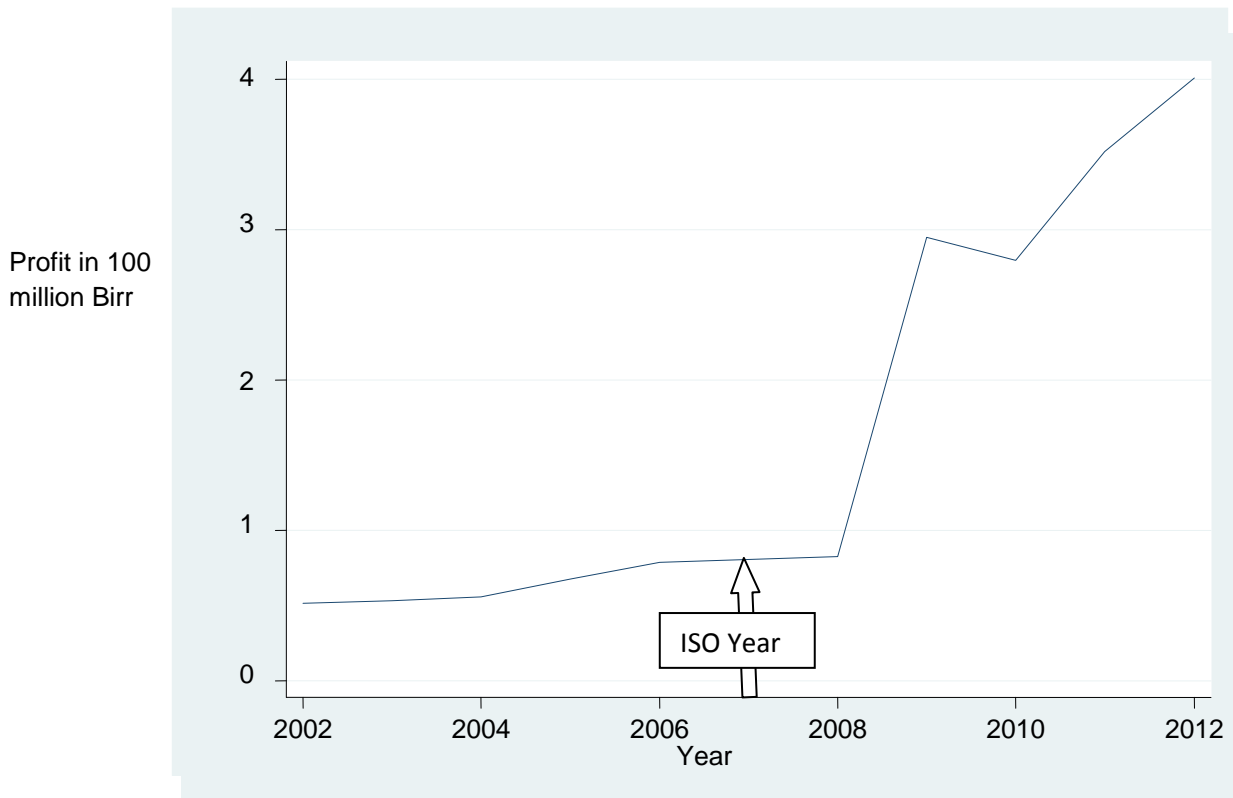


Figure 4.7: Distribution of Profit of Company 4 over the years 2002 to 2010/11.

The trend of profit for the company taking the year before certification shows that there was an increase of an amount at a lower rate. However, after the company has certified for ISO 9001, there is an increase of profit at higher rate. The company has especially, experienced a higher rate of profit increase in those three years following the company's ISO certification.

Specifically, the company's operational activity in the second year of its certification depicts a dramatic change than it has been operating. This trend also continued in the subsequent operation periods and slowed down in its fourth year of operation after the certificate. Nevertheless, the company has resumed its profit to an increasing level in the following year.

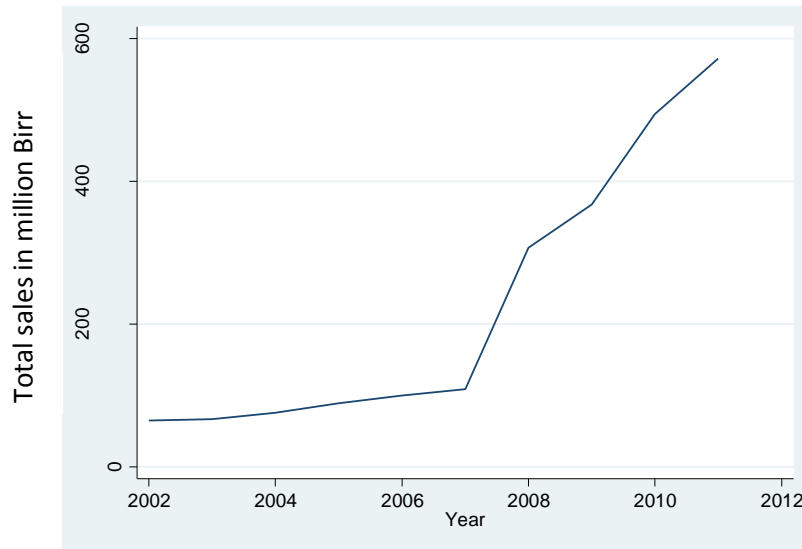


Figure 4.8: Total sales distribution of Company 4 over the year 2002 to 2011.

The sales amount of this company was experiencing different trends over the last ten years of its operation. Taking the trend of sales before ISO 9001 certification, the company has a slower rate of sales growth showing a total sales amount of about less than two hundred millions of birr. In contrast, the sales amount of the company after the certificate was at a position of doubling itself even when we compare with the year of the certificate.

In the following year, the total sale of the company was about three times that of the sales at the period of certification. Thus, this could be the sufficient proxy to evaluate the state of performance of this company. Accordingly, one can conclude that the sales performance of the company after ISO 9001 certification is better than the company's performance before the certificate.

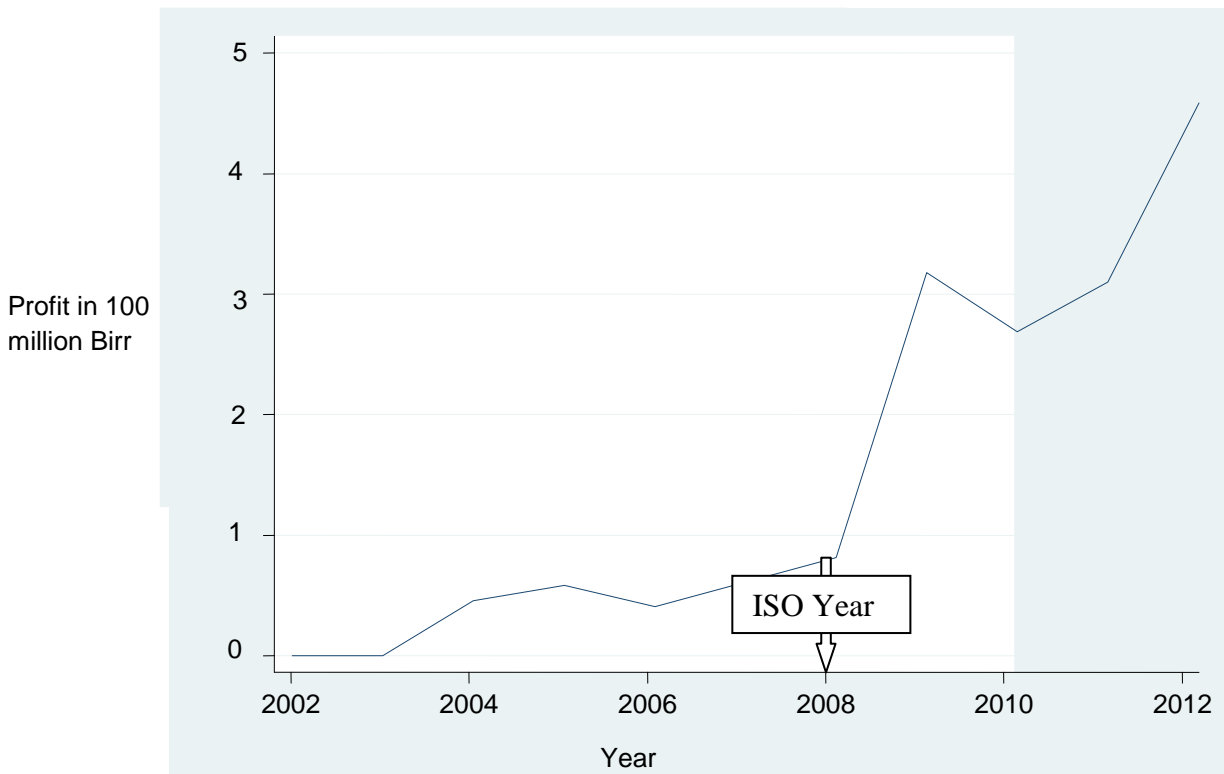


Figure 4.9: Distribution of Profit of Company 5 over the years 2002 to 2010/11.

The profit distribution of Company 5 shows that there is an insignificant change in the trend of its operational period before the certificate. This implies that the company is performing better after ISO certification than its operation before ISO certification. In other word, the company is currently performing well than when it was not certified for ISO 9001. This better performance can be described in terms of the increased amount of profit at higher level contrary to the prior years.

ISO 9001 certification do also have its own importance on improving the company's sales volume and reducing the associated costs. If the company's cost is reduced to a reasonable level and the revenue they generate is of at an increasing rate, then there will be a better profit than that of before the certificate. This profit in turn can indicate that there is an improvement on the performance of the company.

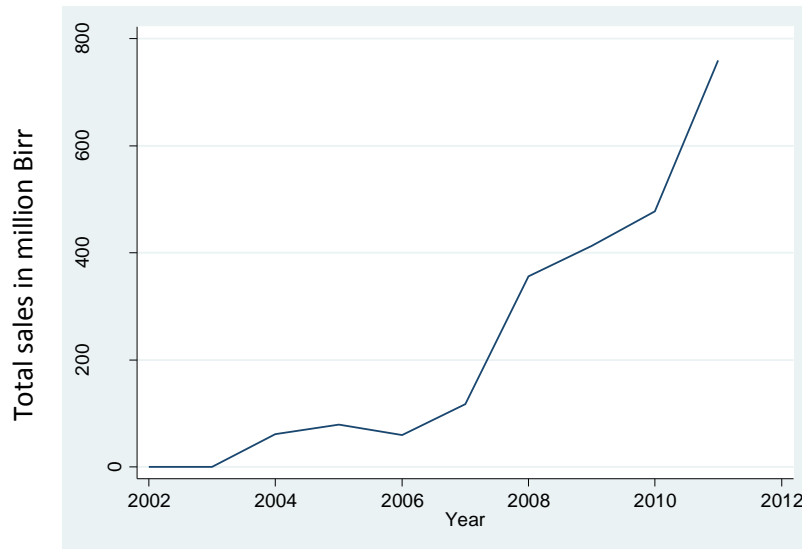


Figure 4.10: Total sales distribution of the company over the year 2002 to 2011.

The company has experienced a varied sales amount before it was certified for ISO 9001. The company’s sales performance before the certificate was at the level below two hundred million birr. But, immediately after the certification period, the company’s sales amount was doubled to the level of about four hundred million birr. This shows the company’s sales performance is at the point better than that of before the certificate.

In general, these companies have experienced two states of business performance. Their states of performance could be classified in to those before ISO 9001 certification and those after ISO 9001 certification. Accordingly, each company has a better business performance expressed in the form of profit after they are certified for ISO 9001. These companies reported higher profit than they had reported before. Additionally, the sales performance of these companies is better than before their year of certificates performance.

## 4.2. Statistical Tests

### 4.2.1. Multicollinearity Test

To check whether there is severe multicollinearity in the model, the simple correlation coefficients between the explanatory variables have been examined. As shown in table 4.5 the values of all the correlation coefficients between the explanatory variables are lower than 0.80 which implies that the test does not detect the existence of severe multicollinearity of explanatory variables in the model.

**Table 4.5: Correlation matrix of explanatory variables**

	Total sales Quantity	ISO	Average cost	Average Revenue
Total sales Quantity	1.0000			
ISO	-0.1112	1.0000		
Average cost	-0.3686	0.1603	1.0000	
Average Revenue	-0.2407	0.7269	0.1882	1.0000

### 4.2.2. Heteroscedasticity Test

To apply OLS estimation in panel data model, homoscedasticity (constant variance) is an underlying assumption. Consequently, the assumption of homoscedasticity in the panel data needs to be tested. The test adopted here is the usual Breusch-Pagan test.

**Table 4.6 : Breusch-Pagan test for heteroscedasticity**

Ho: Constant variance
$\chi^2 = 0.86$
Prob > $\chi^2 = 0.3548$

As it can be revealed from the above table, the probability value of the chi-squared statistics is 0.35 which indicates that the null hypothesis cannot be rejected. Hence, the basic assumption of homoscedasticity is satisfied.

### 4.3. Regression Results

To examine the impact of ISO registration on the performance of the companies under consideration, the OLS estimation is applied to the panel data set. The estimation result of the panel data model is summarized in table 4.7 below. The output reveals that ISO certification and average revenue have significant impact on profit of the companies while average cost and sales volume appeared to be insignificant.

**Table 4.7: Regression Results**

Dependent variable is the natural logarithm of a company's profit.

<b>Independent Variables</b>	<b>Coefficient</b>	<b>Standard error</b>	<b>p-value</b>
Average Revenue	.0517215	.0163656	0.003
Average Cost	.0008277	.0045107	0.855
Sales (ln)	.0088982	.0385159	0.818
ISO Dummy	.8840815	.2251657	0.000
Constant	17.97432	.6683839	0.000
No. of observation	50		
F-stat.(prob>F)	0.0000		
R <sup>2</sup> (adj. R-square)	0.6597		

As shown in the above table, ISO certification has a positive and significant impact (at one percent level of significance) indicating that the certification positively affects the companies' profit. Specifically, the companies' profit increases by 88.40 percent due to ISO certification.

Average revenue which proxies the annual per unit revenue generated by the companies' product is found to be significant (at one percent level of significance) with positive coefficient. That is, a one percent increase (decrease) in average revenue results in a 5.17 percent increase (decrease) in the companies' profit. The result is in line with the theory that an increase in the price of a product improves the profit of a company while the decrease in per unit price obviously reduces the profit, provided that the costs are not changing in identical proportion.

The estimated coefficient of annual total sales is positive but insignificant (even at ten percent level of significance). This fails to support the premise that more sales increase the profit of a company while reduction in sales results in reduced profit. Similarly, average per unit cost is found to be insignificant with the unexpected positive sign.

The overall significance of the model is tested by the value of  $R^2$  which shows the variation in the dependent variable explained by the variation in the explanatory variables. Accordingly, 65.97 percent of the performance measure in this model is explained by the included explanatory variables such as sales volume, average price, ISO-certification, and average cost. The joint significance test for the null hypothesis that all coefficients of the explanatory variables are jointly equal to zero is rejected at one percent significance level.

This is shown by the F-stat.( $p=0.0000$ ). The implication is that the estimated coefficients of sales volume, average revenue, average cost, and ISO-certification are not jointly equal to zero rather they are jointly important in explaining the performance of the companies.

## **Chapter Five**

### **Summary, Conclusion and Suggestions**

#### **5.1. Summary**

In this research the impact of ISO 9000 certification has been examined. Review of related literature has been conducted. The literature has included theoretical perspective of the subject under consideration that deals about whether ISO certification can affect the companies' performance or not. The motivation to be certified for ISO 9000 is also discussed. These motivations are those internal to the companies and those external to the companies. With this internally motivated firms are more benefited from ISO certification than those externally motivated to implement ISO 9000 certification.

Moreover, ISO certification does have certain benefits to the companies. The benefits are either internal or external to the Companies. The internal benefits of the companies are related to the process and structure of the organization like improvement in productivity, improvement in efficiency, reduction in cost and waste, better management control and others. Those benefits external to the organizations are: competitive advantage, increase in sale and market share, possible chance of getting into new market, good customer relation and identifying potential customers, increased customer satisfaction and the like. However, ISO certification does have its own disadvantages. Some of the disadvantages are extra cost of obtaining the certificate, increase in paper work load, and no attention for development of personnel.

The study has included the variables to measure the performance of the companies with the help of ISO certification. Accordingly, the business data of five Brewery Companies in Ethiopia is collected from the Central Statistical Agency of Ethiopia. The data were

described with the help of descriptive statistics and tested for its significance. Putting the companies' profit as a dependent variable, the impacts of ISO certification along with average revenue, average cost and sales volume is tested using OLS with panel data. The result revealed that ISO certification and average revenue have a significant positive impact on Brewery companies' performance.

## **5.2.Conclusion**

As the finding indicates, there is a strong or a significant impact of ISO certification on companies' performance. The results indicate that ISO certification affects the companies' performance in various measurement areas.

As measure of performance for a company in relation to ISO certification is profit of the companies is considered for analysis purpose. With this performance measure annual sales volume, annual average revenues, annual average costs of the companies and ISO certification is included in the analysis procedures. ISO certification is found to be significant to affect the companies' performance. ISO certification has improved the individual companies profit from time to time especially after they are certified when compared with their state of performance before the certificate.

This is mainly due to the reason that ISO registration requires the company to fulfil certain pre requisite before certification. This lead the company to facilitate things for the audit, which in turn improved their production processes reduces costs and help them generate more revenues.

Another indicator of the companies' performance is their annual average revenue. This variable is also found to be significant to affect the companies' performance. With this one can conclude that only certifying for an ISO is not performing well in their respective industry. Thus, average revenue of each company plays a significant role in determining their performance. However, ISO certification helps the companies to generate more revenues as most of the buyers require their suppliers to have a system that guarantee their products quality consistency. In this way as they are certified for such systems, they can generate better revenues which can contribute for their profit performance. Moreover, the companies can involve in international markets.

In general, the results of this panel data analysis revealed that annual average revenue do have a significant impact on the companies' performance, which is their annual profit. In addition to this variable, ISO certification does have a positive impact on brewery companies' performance. This is therefore answers the question that does ISO certification has a positive impact on the companies' performance?

### **5.3.Suggestions**

Based on the conclusions of the finding, the following suggestions were forwarded to those companies' management considering ISO 9001 certificate.

- ✓ The companies are currently in a position that they can perform their production processes in a better way than before. To continue this operational and production efficiencies they should further search for the best way of mastering quality management system as ISO certification is not the only goal of these companies.
- ✓ The companies should also improve on selling more units of its products as ISO certification is not securing increased sales amount. Additionally, as the variables under considerations slightly contribute to the company's profit, there should be a proper distribution of their products because the mean amount of sales volume of the companies' product after the certificate is lesser than that of before the certificate.
- ✓ The company should also work on processes that could reduce the costs associated with the operational activities and it should also cut operations that add nothing to achieve its objectives. This is mainly due to the reason that the annual average cost of some companies is more than their annual average revenues.
- ✓ In general, as ISO certification is not the only goal of any company, the companies should consider several internal factors that can contribute to the companies' profit. The company should consider the employee side contribution to the performance of the company. They should also search for other ways of performing well in their industry and in the international markets.

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## Appendix

### A1: Secondary Data obtained from Central Statistical Agency of Ethiopia

	Year	Total Sales	Quantity Sold	Quantity Produced	Total Cost
Company 1.	2002	80,980,893	14,147,337	16944413	16440430
	2003	108,746,368	17,243,124	16713474	2,143,071
	2004	132,377,957	208,578	214461	28144381
	2005	123,523,240	58,812,331	58810273	24668776
	2006	139,664,064	66,626,167	67226762	27478040
	2007	144,154,838	22,692,809	22575606	28894806
	2008	313,285,718	23,819,997	22470518	909754
	2009	354005574	24809005	26206428	81417944
	2010	485,098,806	34540295	20318522	133599154
	2011	566,317,948	230,878	238289	164705190

Source: CSA survey (2002-2010/2011)

	Year	Total Sales	Quantity Sold	Quantity Produced	Total Cost
Company 2.	2002	196,369,680	51,042,514	36707410	34139541
	2003	198,810,702	368,225	370010	32,108,862
	2004	203,706,862	205,457,637	86578188	39807515
	2005	204,857,952	378,526	380765	44251246
	2006	199,155,184	83,684,976	83581997	40482294
	2007	205,271,596	38,340,529	38669722	43668284
	2008	499,140,622	436,278	416687	19750420
	2009	554705456	480515	480567	151294142
	2010	701,356,444	479349	448639	223082534
	2011	777,899,754	323,114	307189	290988494

Source: CSA survey (2002-2010/2011)

	Year	Total Sales	Quantity Sold	Quantity Produced	Total Cost
Company 3.	2002	136832431	23122628	55413797	41074090
	2003	136832432	16533970	26112895	41180321
	2004	127318775	251862	252451	31540056
	2005	125022843	46979884	48825739	34684316
	2006	106626771	40409078	41309083	32754412
	2007	130054934	29486373	27287720	39090479
	2008	571556874	41359834	41431430	23717772
	2009	873870060	7746529	7736287	280169996
	2010	1926758428	140936772	81195067	555180006
	2011	26885421292	102659213	102654923	650595290

Source: CSA survey (2002-2010/2011)

	Year	Total Sales	Quantity Sold	Quantity Produced	Total Cost
Company 4.	2002	65,147,552	19,899,573	11594969	13612024
	2003	66,924,343	27,885,143	30601797	13,926,508
	2004	76,024,630	10,280,666	10265701	20343778
	2005	89,039,799	14,362,854	14966141	21324111
	2006	99,993,912	16,279,078	15948752	21420382
	2007	108,828,245	174,747	174311	26164210
	2008	306,818,700	23,268,976	23241909	11604518
	2009	367565354	26432767	26372478	88037046
	2010	494,552,824	30886921	30788892	142503088
	2011	572,107,262	24,319,811	23215216	171221336

Source: CSA survey (2002-2010/2011)

	Year	Total Sales	Quantity Sold	Quantity Produced	Total Cost
Company 5.	2002				
	2003				
	2004	61,377,252	26,666,932	27957369	12127585
	2005	78,556,609	34,086,287	34529778	15165167
	2006	59,621,668	25,064,609	24843376	15638994
	2007	117,196,597	18,718,734	18732350	29271621
	2008	355,648,494	266,750	272558	11600660
	2009	35565777.5	302254	307622	122055622
	2010	477,264,990	333605	319,997	141938218
	2011	759,109,762	30,799,204	26354568	262544414

Source: CSA survey (2002-2010/2011)