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Department Of Logistics and Supply Chain Management

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August, 2020

Bahir Dar, Ethiopia

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By

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A Thesis Submitted To College Of Business and Economics Department of Logistics and Supply Chain Management, Bahir Dar University the Partial Fulfillment of Masters of Art in Logistics and Supply Chain Management

Advisor

BirukSolomon (PHD)

July, 2020

Bahir Dar, Ethiopia

Declaration

I, the under signed, declare that this thesis entitled “Measuring Supply chain Performance in Ethiopian Pharmaceutical Supply Agency Using Balanced Scorecard Model: The Case of Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub”, is my original work and to the best of my knowledge has not been presented for a degree by any other person, and that all the sources of material used for the thesis have been duly acknowledged.

Declared by:

AzemerawManaye

_____

Date & Signature

Statement of Certification

This is to certify that the thesis carried out by AzemerawManaye on the topic entitled: “Measuring Supply chain Performance in Ethiopian Pharmaceutical Supply Agency Using Balanced Scorecard Model: The Case of Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub” is his original work and is suitable for submission for the award of Masters of Art Degree in Logistics and Supply Chain Management.

Advisor:

Biruk Solomon (PHD)

_____

Date & Signature

Bahir Dar University

College Of Business and Economics

Department of Logistics and Supply Chain Management

This is to certify that the thesis carried out by AzemerawManayeGessie, entitled: “Measuring Supply chain Performance in Ethiopian Pharmaceutical supply agency Using Balanced Scorecard Model: The Case of Ethiopian Pharmaceutical supply Agency Bahir Dar Hub” and submitted in partial fulfillment of the requirements of the Degree of Master of Art in Logistics and Supply Chain Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abbreviations and Acronyms

BSC -Balanced score card

EPHARMECOR -Ethiopian Pharmaceutical and Medical Supplies Corporation

EPSA -Ethiopian pharmaceutical agency

FMOH - Federal ministry of health

IQ - Information quality

IPLS -Integrated Pharmaceuticals Logistics System

JIT - Just –in- time

PFSA - Pharmaceutical fund and supply agency

PHARMED-Pharmaceutical and Medical Supplies Importer and wholesale Distributor

SC - Supply chain

SCM - Supply chain management

SCMS - Supply chain management system

SCOR - Supply chain operation reference

WHO - World health organization

Abstract

The study sought to determine the Balanced Scorecard measures on supply chain performance at Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub. The objective of the study was to measure the performance of supply chain of Ethiopian pharmaceutical supply agency Bahir Dar Hub from BSC approach. The research designs involved were descriptive and inferential explanatory design. Data were collected from 97 Ethiopian pharmaceutical supply agency Bahir Dar Hub employees using a survey questionnaire thatwas administered to employees and conducted by researcher. Tables were used to present data. Descriptive statistics like mean and standard deviation were used to analyze demographic and each constructs under investigation, whereas inferential statistics like Correlation and regression analysis were used to measure the relationship between independent (Balanced Score Cardmeasures) and dependent (supply chain performance). The result of the study established that the Balanced Score Card measures are greatly used to establish the supply chain performance at Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub. Learning and growth measures(b=0.382) has the most positive influential effect on supply chain performance, followed by Customer measures, financial measures and internal business process measures (b = 0.265, b = 0.180, and b = 0.156) respectively at p value <0.001. It was also found that there is a significant relationship between BSC measures and supply chain performance represented by R^2value of 0.860 which translates to 86.0% variance explained by the four independent variables of financial measures, customer satisfaction, internal business processes, learning and growth measures. The overall supply chain performance of Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub is moderate performance. But, in contrast to this there are problems related to clear financial goals, uses promotion to gain customer, Experience sharing with suppliers and adding value to the employees from Balanced Score Card dimensions. Therefore from the result it can be concluded that Balanced Score Card measures at Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub is strongly affecting their supply chain performance. It was also recommended that the company should keep using Balanced score Card as performance measurements as holistic performance perspective in such a way that they can solve problems raised by Employees. Finally, based on the limitation of this study, further research can be done on a wider group of companies to establish whether the Balanced Score Card measures are better in measuring Supply chain performance in pharmaceutical industry.

Key words: Supply Chain, Supply Chain Management, Supply Chain Performance Measurement, Balanced Scorecard

Chapter One: Introduction

This topic begins with a brief background to the study, which leads to an introduction of the case company, Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub, statement of the problem of the study, question and objective of the study will then be presented.

1.1 Background of the Study

The supply chain is the network created among different companies that produce, handle, and distribute a specific product (Susarla&Karimi, 2012); in the current study, the product being investigated is pharmaceutical medicine.

The word performance is an evasive concept and may be interpreted differently by different people; performance can be defined as the ability to perform or capacity to achieve desired results (Serem, 2002). Supply chain performance seeks to establish the Productivity of the supply chain though measuring of the whole supply chain instead of Focusing on the functional units.

The global nature of business has forcedmost companiesto recognize thecritical role ofback end operations of a logistics supply chain. As firms focus on production, marketing,Human Resource Management and finance, greater attention is required to achieve customer satisfaction through efficient logistics (Sink, 1997). Managementoflogistics functions in modern organizations involves decision making for the completedistribution of goods and services in the marketing function (Watson and Pitt, 1989) with a view to maximize value and minimize cost and more so to enjoy and achieve efficient supplychains.

The growing awareness that competitive advantage comes from the delivery process as much as from the product (Chanzu, 2002) has been instrumental in upgrading logistics from its traditional back-room function to a strategic boardroom function (Luck &Rubbin, 2006). Among the reasons that have been proposedtoexplain thistrend is: there is a growing need to be more responsive to customer service and market demand (Kirui, 2001). As an integrative concept that cuts across the traditional functions of the business (Christopher, 1999), logistics can deliver better customer service, that logistics activities involve a large commitment of capital and that the logistics function can be the key facilitator in the cross-functional effort towards supply chain integration (Njagi, 2011). Hence it is not surprising that concepts such as supply-chain managementhave nowassumed strategic importance. In order to handle its logistics activitieseffectively and efficiently, a company

may consider a number of options: it can providethe functioning-house by making the service in-house; itcanown logistics subsidiaries through setting up or buying a logistics firm (Stock &Lambert, 2009) or it can outsource the function and buy the service.

According to Sharma (1995) the commonly used measures of supply chain performance are the balance score card and SCOR model. The supply chain performance is measured at multiple levels and assigned five categories of metrics to level one of this model; reliability, responsiveness, flexibility.

The pharmaceutical and healthcare industry, in the opinion of Viglo(2014), is hugely complex because it involves so many markets, products, processes and intermediaries. Changes in one area impact upon the others and environmental factors such as pricing, regulatory change or actions by competitors, impact the whole supply chain in ways that are not easily understood or properly managed.

The pharmaceutical industry delegates distribution to third-party logistics providers and wholesalers and is less advanced in terms of channel management compared with other sectors. One technique is to deliver the most innovative products straight to retail pharmacies, hospitals, and specialist clinics without using wholesalers. In fact, with repeat prescriptions, drug companies could even supply directly to some patients. Wholesalers, would still have a large role in distributing mass-market drugs with high volumes and could make a far larger contribution by assuming responsibility for packaging such products and managing their distribution on a regional, rather than a national basis (Ali et al,2013).

Alternatively companies may choose to manage the funds used to support pharmaceutical distribution and channel management more effectively. By relying on wholesalers to distribute their products and using incentives and bonuses as motivation, pharmaceutical companies can manage the performance of their wholesalers and third-party logistics providers. To do so, he indicated that, pharmaceutical companies must create stronger relationships with retail pharmacies and hospitals that distribute their products and focus on the needs of patients through channel-to-market innovations (Ali et al,2013).

If they create strong relationships, companies can expect to control the channels, see margins recover, enjoy better market intelligence, accelerate the point at which sales peak, reduce planning inaccuracies and limit counterfeiting. There are no short cuts and there is no single solution when it comes to building a capable supply chain (Ilkka, 2012).

Supply chain management is a concept that is gaining in popularity and importance and there is still much to investigate, since there is no a universally accepted definition yet. As a result of that, there are not many empirical researches on the benefits of supply chain management and certainly studies and analysis will improve if a single definition would be adopted. The evolution of the recent competitive environment resulted in an even greater interest in the management of the activities external to the production system. SCM It includes divisions from the management concepts of previous decades. Many definitions for SCM have been presented. SCM has been and is still regarded as a synonym for logistics, supply and SC control (Ilkka,2012).

Supply chain has become one of the top priorities on the strategic agenda of industrial and service businesses. The main purpose of any supply chain management system is to get the right product, in the right quantity, in the right quality, to the right place, at the right time (Ali et al, 2013).

In present-day there is the assumption that SC's should compete instead of companies being the SC's success mainly determined by the marketplace. Therefore, Supply Chain Management (SCM) is considered a strategic factor for the better attainment of organizational goals such as enhanced competitiveness, improved customer service and increased profitability. However, to ensure a better SCM it is important to develop a performance measurement system that properly reflects the real SC's performance (Ilkka, 2012).

According to Ernesto santibanez et al 2010, the lack of appropriate SC metrics may compromise customer satisfaction, sub-optimization of the organization performance, missed opportunities to outperform the competition and conflicts within the SC. Performance measurement is therefore crucial to better SCM . It can facilitate inter-understanding and integration among the partners in the SC while revealing the effects of strategies and potential opportunities in SCM.

Today the broader definition determined by the Global Supply Chain Forum is generally accepted as a norm "Supply Chain Management (SCM) is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (Ilkka, 2012).

For any business activity, such as supply chain management (SCM), which has strategic implications for any company, identifying the required performance measures on most of the criteria is essential and it should be an integral part of any business strategy(Ali et al,2013).

The pharmaceutical supply chain can complicate or enable future growth. The supply chain can be used to accelerate time to market, maximize revenue from new products, block generic competition and protect patients from counterfeit drugs. By engaging in supply chain transformation and adopting an integrated approach to supply chain management, businesses will be able to position themselves to compete in the rapidly changing marketplace. If managed properly, the supply chain can be a significant source of added value to any pharmaceutical company's bottom line(Ali et al,2013).

Many methods have been suggested over the years for SCM evaluation of any organization. However, a balanced approach to evaluate SCM is a source of increasing cost and concern to management as traditional methods focus only on well-known financial measures, which are best, suited to measure the value of simple SCM applications. Unfortunately, evaluation methods that rely on financial measures are not well suited for newer generation of SCM applications.These complex supply chains typically seek to provide a wide range of benefits, including many that are intangible in nature. As a result, we suggest that it may be appropriate to use a balanced approach to measure and evaluate supply chains (Lusine H2007).The current financial and economic situation is making increasingly necessary the collaboration between all the most critical supply chain partners, since it is no longer sufficient to approach the business in a individual logic; in addition, the recent financial and liquidity problems are still affecting almost all countries in the world (Lusine H 2007).This situation is asking to extend the collaborative approach also to finance in order to introduce innovative solutions, reducing the gap between the physical and the financial supply chain; SCF is a setof non-canonical financial schemes based on the exploitation of the relationships between the supply chain partners and aimed to build a win-win situation for all the actors involved. SCF is a quite recent discipline and it is not well structured yet, since there are no universally accepted terminologies and classifications of its tools; moreover, its potential is strongly affected by the features and conditions of the different countries. In fact, the future developments of SCF depend on the number of players able to benefit from these solutions and their relevance in the economic system (Jorge 2009).

The profitability of the supply chain could be improved drastically via better delivery performance (improved responsiveness and reliability of deliveries, fewer stock outs, higher product quality, more receiver-friendly loads) and increased information availability (better

demand insight, more predictable order cycles, accurate, real-time) at the operational level and a reduction of time-to market at the tactical and strategic level(Ali et al,2013).

Despite the role of supply chain management as a competitive tool, the supply chain operational excellence in the pharmaceutical industry in Ethiopia is under researched and there is knowledge gap how well is the performance supply chain management practice in Ethiopia. Consequently, this thesis will focus on investigating the performance of supply chain management practice in the case Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub Located in Bahir Dar in terms of their Financial perspective, learning and growth and internal business in supply chain management in this industry with limited scope.

1.2 Statement of the Problem

Supply chain Performance measurements are becoming more and more important when SCM is coming into focus. Measuring supply chain performance helps an organization to Identify success, to identify whether the organization understand its processes, to Identify whether the company is meeting customer requirements, to Identify bottlenecks and where improvements are necessary, to ensure decisions are based on facts, to show if planned improvements actually happened. Lacking a general understanding of supply chain performance and the associated causal factors limits organizations ability to identify the best opportunities for improving supply chain performance. This study addresses this gap by describing a methodology for measuring supply chain performance based on empirical data integrating several statistical approaches. This study will also identify several opportunities for additional research on pharmaceutical supply chain performance measurement.

The pharmaceutical supply chain is complex, and involves many organizations that play differing roles. In Supply chain performance measurement the main purpose is to get information for top management's needs, but also several kinds of Supply Chain measures are needed at every management and operational level. SC should be measured because of management interest in measuring how efficient SC is. Gunasekaran*et al.* (2004) introduces six metrics for measuring SCM capability and performance. Metrics are based on the following SCM processes: plan, source, make/assemble and delivery/customer. (Gunasekaran*et al.* 2004)

Shepherd and Günter (2006) categorize SC performance measures into five SC processes: plan, source, make, deliver and return or customer satisfaction, whether they measure cost, time, quality, flexibility and innovativeness and whether they are quantitative or qualitative measures. Measure can be categorized according to business processes or into strategic, operational and tactical management levels. (Shepherd & Gunter 2006).

Measuring supply chain performance is not as such simple as traditionally known sets of performance measurement that only focuses on financial measures. Supply chain activities like sourcing, producing, inventory and distribution and the associated factors that affect the ability of supply chain performance and meet the maximum service level provided by the company. The pharmaceutical industry is not renowned for its supply chain management capabilities, unlike many other highly publicized industries that have profitably exploited their supply chains.

Almost all local manufacturing of medicine in Ethiopia is limited to secondary manufacturing that involves combining various active ingredients and processing bulk medicines into dosage forms. This exposes the firms to a high level of foreign exchange risk and long lead-times for raw materials. Most pharmaceutical manufacturers have a low level of capacity compared with their foreign counterparts that leads to the company not to achieving economies of scale. This lead to low level production capacity and high production costs (Sutton and Kellow, 2010).

It is thus critical to measure the performance of the current supply chain in the pharmaceutical manufacturing industry of Ethiopia , the study focused on measuring the performance of each activities of the supply chain that influence supply chain performance of pharmaceutical factory, because the company now follows the traditional aspect of performance measures.

Literatures indicate that companies are now seeking to integrate their decisions across the supply chain partners globally as a result of increasing awareness about the financial and non – financial impact of supply chain management processes on business companies in particular. In Ethiopia, the concept of supply chain management and measuring its performance for improvement is at the infant stage except very few multinational and international companies investing in Ethiopia. According to my literature reviews, most of the researches on assessment of supply chain management performance were conducted on manufacturing companies in the developed

countries and very few in developing countries, like Ethiopia. Specifically, the researchers conducted on the supply chain process performance on pharmaceutical industry were very rare in Ethiopia in particular. As a result, there was little insight about the performance of supply chain management in the pharmaceutical industry of Ethiopia. This knowledge gap in the subject of this thesis in this competitive industry caused the researcher to incline for conducting this research study.

1.3 Objective of the Study

1.3.1. General Objective

The main objective of this study is to measure the performance of supply chain of Ethiopian pharmaceutical supply agencyBahir Dar Hub from BSC approach.

1.3.2 Specific Objective

- ✓ To measure the performance the company's Supply chain from financial perspective
- ✓ To measure the performance the company's Supply chain from customer perspective
- ✓ To measure the performance the company's Supply chain from internal business process Perspective
- ✓ To measure the performance the company's Supply chain from learning and growth Perspective

1.3.3. Hypothesis of the Study

In order to achieve the above specific research questions the following hypothesis is hypothesized for literature review:

H1: There will be positive and significant relationship between financial capacity and supply chain performance in EPSA.

H2: There will be positive and significant relationship between customers focused practices and supply chain performance in EPSA.

H3: There will be positive and significant relationship between effective internal business process and supply chain performance in EPSA.

H4: There will be positive and significant relationship between learning and growth practices and supply chain performance in EPSA.

1.4 Significance of the study

The intention of the study is to measure the performance of the SCM in the pharmaceutical supply agency (EPSA) of BAHIR DAR HUB in particular. The effective implementation of the SCM by such companies produces core competencies so that they can compete with the importing companies. Therefore, the study has practical significance to assess the practice of the SCM as well as the challenges faced in it. Moreover the study can help the company to make some changes based on the result of this study and to understand how those performance indicators affects supply chain performance and it can also help to provide for researchers, academics and students reliable data about supply chain performance measurement of pharmaceutical supply agencies.

1.5 Delimitation of the study

The objective of this study was to empirically measure the supply chain performance of Ethiopian Pharmaceutical Supply Agency B/Dar Hub from BSC approach to addresses the performance from customer, financial perspectives, and internal business process and, learning and growth perspective. Tothis end, the scope of this study was delimited to the theoretical explanations of the phenomenonof BSC in measuring SCP of pharmaceutical company. Methodologically, this study wasdelimited to Quantitative design (descriptive and regression analysis) for quantitative study. Empirically, the study was delimited to quantitativedata collected from the distributed questionnaires. And geographically this study was delimited to Ethiopian Pharmaceutical Supply Agency B/Dar Hub, Bahir Dar, Ethiopia.

The delimitation of the study is, it only focuses on the case of Bahir Dar EPSA employees. The data is collected from Bahir Dar EPSA employees. Assessing the employees' perception on Supply Chain performance measurement practices of EPSA Bahir Dar Hub detail analysis of data is needed for further conclusion.

1.6 Organization of the study

The study is organized in to five chapters. Chapter-one presents the introductory part of the study that comprises, among others, the background of the study, statement of the problem along with the research questions and objectives of the proposed study.

Chapter-two deals with the review of the extant literature related to the topic of inquiry; whereas chapter-three gives detail account of the design and methodological aspects employed.

The analysis of the study data, presentation of the results and corresponding discussions are comprised under chapter-four.

1.7 Definition of Terms

Supply Chain (SC): A group of interconnected participating companies that add value to a stream of transformed inputs from their source of origin to the end products or service that are demanded by the designated end consumers. (DeweiLu, 2011p. 9).

Supply Chain Management (SCM): The management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole. (Christopher, 2011p. 3).

Supply Chain PerformanceMeasurement: According to Chan (2003) performance measurement describes the feedback or information on activities with respect to meeting customer expectations and strategic objectives.

Balanced Scorecard: A balanced scorecard is a performance metric used to identify, improve, and control a business's various functions and resulting outcomes (Kaplan & Norton, 1992).

Chapter Two: Review of Related Literature

2.Introduction

This chapter reviews relevant literature on the key areas that the study covers. This chapter presents the theoretical underpinnings of the study. With a focus on the objectives and theoretical thresholds of this study, the chapter reviews related and contemporary literature on the concept of supply chain performance using Balanced score card model. The chapter examines various research studies and reports done locally (Ethiopia) and globally.

2.1 Theoretical Review

2.1.1. Supply Chain Management Definition and concept

With the rapid development of economic globalization, knowledge-based, information technology, the competition between enterprises is not a single enterprise in a certain time, a certain space, the competition for certain end markets, customer one-on-one competition, but become a kind of competition based on product development, design, manufacturing, distribution, distribution, sales and service competition across time and space, has been developed into a competition between the supply chain management (Yan , and Yang ,2013).

Hasan, Zulkifli ,Malak, Nizaroyani , (2016), views supply chain management as a process of associating several business entities consisting of suppliers, manufacturers, distributors, retailers and customers. These integrated entities are important in managing the flow of resources such as material flows (products, servicing, recycling), information flows (order transmission, tracking, and coordination of physical flows), and financial flows (credit terms, payment schedules, and consignment arrangements). As supply chains compete against supply chains, it is vital that they are managed effectively so as to enhance their performance.

Supporting this Machado, (2013) defined that; supply chain management is the model being used increasingly in the business world, leading organizations necessities in rethinking their strategies. He continued to add that, improvement on the proceedings involved in the network links of supplies has the synergetic effect on global network performance.

Moreover, supply chain management creates value for companies, customers and stakeholders whom interacting throughout the supply chain (Estampea D., et al 2013). In today's complex and changing business environment, enterprises must carefully develop their business strategies to

gain a competitive advantage over the long term. Therefore, how to plan and formulate strategies for enterprises plays a decisive role (Chih C., et al (2016).

Pharmaceutical supply chain is a network of supplier, manufacturing, distribution and logistics facilities of various pharmaceutical products. The pharmaceutical industry can be defined as a complex of processes, operations and organizations involved in the discovery, development andmanufacture of drugs and medications. The World Health Organization (WHO) defines a drug or pharmaceutical preparation as: any substance or mixture of substances manufactured, sold, offered for sale or represented for use in the diagnosis, treatment, mitigation or prevention of disease.

2.1.2. *Balanced Scorecard (BSC)*

Kaplan and Norton (1992) have proposed the Balanced Scorecard, with the purpose to evaluate organization's performance. The organization's mission and strategy are interpreted by the BSC, into a comprehensive set of performance measures which provide the framework for a strategic measurement and management system based on four balanced different perspectives, customer perspective, financial perspective, internal process improvement, and organizational learning perspective (Kaplan & Norton, 1996).

Their Balanced Scorecard is designed to complement "financial measures of past performance with their measures of the drivers of future performance". The name of their concept reflects an intention to keep score of a set of items that maintain a balance "between short and long term objectives, between financial and non-financial measures, between lagging and leading indicators, and between internal and external performance perspectives (Yan H., and Yang Z., 2013). These indicators are very important for the competitiveness of a company; in fact, they allow managers to consider all measures of performance and to assess whether it is possible to achieve improvement in a specific area, without affecting the performance of other areas (Wu and Chang, 2012, Paddeu, .2016.

Moreover, the BSC is used in order to support businesses into new strategies, decrease the cost and employ growth opportunities based on more customized, value-adding products and services (Bhagwat& Sharma, 2007)

Yan , and Yang, (2013) stated that Balanced Scorecard not only helps organizations in faster and wider progress monitoring of their operations but can also help them in improving their internal

and external functions of business such as engineering and design applications, production, quality improvement, materials management, quick response, gaining lost market shares, proper implementation of business strategies. Therefore, it is clear that for effective supply chain management, measurement goals must consider the overall scenario and the metrics to be used.These should represent a balanced approach and should be classified at strategic, tactical, and operational levels, and be financial and non-financial measures, as well.

Brewer and Speh (2000) state that the companies which will be competitive in the future are distinguished by the ability to effectively coordinate their processes, focus on delivering customer value, eliminate unnecessary costs of key functional areas and create a performance measurement system that provides data on whether the supply chain is meeting the expectations or not. The actual danger is that companies talk about the importance of supply chain concepts but continue to evaluate their performance with performance measurement systems that are either only slightly affecting or completely not affecting supply chain improvements.

2.2. Empirical Review on BSC and supply chainmanagement

2.2.1. Financial Perspective and Supply Chain Management

The financial performance measures specify whether the company's strategy, implementation and execution plan are effectively contributing to the bottom line improvement of a firm. Financial goals take into account how to achieve “profitability, maintain liquidity and solvency both in short and long term, growth in sales turnover and maximize wealth of shareholders. The financial goals have as a purpose the survival, success and prosperity of the company. Survival is measured by cash flow, success by growth in sales and operating income and prosperity by increased market share and return on equity and capital employed” (Bhagwat& Sharma, 2007).

From the financial side, the Balanced Scorecard not only assess the traditional enterprise financial ratios, return on investment, cash flow, profit and other indicators, but also concerned about the financial condition of the entire supply chain indicators. Financial performance measurement method to reveal the overall strategy of the alliance and its implementation and enforcement are to contribute to the improvement of the supply chain (Yan , and Yang , 2013). Supporting this, the study by Ashioya , (2013) shows that fulfilling customers’ needs and supply chain partners ensures financial success as the overall aim is improving the financial capability of the whole supply chain entities.

A study conducted by Brewer &Speh, (2000) that aim to validate the correlation between supply chain integration and business success shows best practice SCM companies have a 45% total supply chain cost advantage over their competitors. They revealed that better services leads to increased revenue growth and companies participating in information technology's for Integrated Supply Chain Management program reported a 17% revenue increase due to better SCM initiatives.

According Alazab et al., 2010, profit-ability is the key to a firm's ability to remain a viable entity and satisfy its shareholders. It is therefore important to inform consumers of how the firm is doing year after year and actions taken as a way of reflecting financial performance of organizations.

For most businesses, it is nothing more than the pursuit of revenue growth, increasing productivity, cost reduction, financial risk management, and other issues Tseng, M.; Lim, M.; Wong, W.P. (2015).

Cost structure can be measured through cash to cash cycle to know how long it takes to transform cash in assets such as equipments and inventories to cash collected from a customer. Return on investment measures the performance that the top management can achieve on the total capital invested in business. Measuring return on investment enables an organization to have insights about the financial health of the supply chain (Bhagwat&Shamar, 2007).

From the above discussion it can be hypothesized that:

H1: **There will be positive and significant relationship between financial capacity and supply chain performance**.

2.2.2. Customer and Supply Chain Performance

In the customer perspective performance measures are aimed to create tangible results for its customers. One of the changes in business practices dictated by the transition from the industrial age to the information age is the shift of enterprises from being production- and product-focused to being customer-focused (Arik, 2006).

The customer performance measures should answer the question of how do customers see the business. The management must translate the general mission statement on customer service into specific measures that reflect the factors that really matter the customers. The customers are Concerned for the lead-time, the quality of products and services, the company's performance service and the cost effectiveness (Bhagwat& Sharma, 2007)

The customer perspective can be categorized into market share, customer acquisition, customer retention, customer satisfaction, and customer profitability. Companies must amend the target based on the customers who will generate the most expected profit and the greatest potential for revenue growth (Chih.,etal 2016; Fabio, et al., 2015).

The customer perspective can be categorized into market share, customer acquisition, customer retention, customer satisfaction, and customer profitability. Companies must amend the target based on the customers who will generate the most expected profit and the greatest potential for revenue growth (Chih.,etal 2016; Fabio, et al., 2015).

Supply chain Balanced Scorecard is more concerned about the performance of the supply chain in the level of customers and market segments, and clarify how to meet customer needs in order to effectively achieve the financial goals of the entire dynamic alliance. Customer value based on customer perception and therefore requires an assessment of the origin on the customer, including the level of service and customer satisfaction Yan , and Yang , (2013).

On the other hand, one of the main objectives of supply chain management is to meet customer needs. Low performance under this category is a significant indicator of decline in future, even though the present financial situation might appear good (Hasan B., et al 2016)

As studied by Brewer &Speh, (2000), product leadership objective can be achieved through measures such as good product quality and flexibility of products by providing a range of products that the customer wants. The different demands, desires and idiosyncrasies of customers all along the supply chain must be understood and managed effectively for companies to score better supply chain performance.

A study by Gunasekaran et al., (2001), stated that good customer relationship can be achieved through measures such as timely delivery of products, customer response time and order lead time. And a reduction in the order lead time leads to a reduction in the customer response time hence an efficient supply chain.

From the above discussion it can be hypothesized that:

H2: There will be positive and significant relationship between customers focused practices and supply chain performance

2.2.3. Internal Business Process and Supply Chain Management

The objective of this perspective is to satisfy shareholders and customers through excelling in internal processes. Metrics under this perspective assist managers to be aware of the performance of business, and whether its products/services satisfy customer needs (Hasan B., et al 2016)

The internal measures for the BSC represent what the business must excel at. It comes from the business process that have the greatest impact on customer's satisfaction aspects, since the cycle time, the quality, the skills of employees, and productivity are affected. When the organizations decide the processes and competencies that they must excel at, then they should specify measures for each of them (Bhagwat& Sharma, 2007).

Yan, and Yang., (2013) conduct research on supply chain dynamic performance measurement Based on BSC and focused on internal business process measures which have the greatest impact on customer satisfaction and achieve organizational financial goals. Balanced Scorecard method introduced innovative processes to internal business processes, from the point of view of the supply chain considerations, it require companies to create new products and services to meet the current and future target customers demand. These processes can create value in the future to promote the future of corporate financial performance.

As studied by (Chih , et al 2016; Fabio, et al., 2015), the beginning of the value chain of the internal business process perspective is the innovation process, which clarifies the current and future customer needs. New products are developed to meet and create customer needs. Next, the operation process focuses on providing products and services to existing customers. Finally, the post-sales service process, which includes defective products and returns, is accounted for. For example, the BSC can overcome the challenge of high processing costs through the internal business perspective by having measures such as reduced order cycle time and efficient capacity utilization.

Supporting this (Brewer &Speh, 2000 and East African Breweries, 2010) stated that, improving inventory management can be achieved through measures such as inventory costs incurred in the supply chain including purchasing, holding, shortage and ordering costs. Flexibility can be achieved through measures that include how the supply chain responds to urgent orders, forecasting demand by understanding customers and their ordering patterns.

The manufacturing objective can be measured through manufacturing lead time and capacity utilization ensuring better customer response and flexibility. Improved delivery involves

measures such as supply chain cycle time ensuring there is no non-value time hindering the supply chain process. Time compression ensures information and products flow smoothly and quickly (Brewer &Speh, 2000).

From the above discussion it can be hypothesized that:

H3: There will be positive and significant relationship between effective internal business process and supply chain performance in EPSA.

2.2.4 Learning and growth Perspective and Supply Chain Management

This perspective aims to develop a long-term growth of the business. It contains manpower training and corporate cultural behaviors to both individual and corporate self enhancement (Hasan B., et al 2016).

The ability to innovate, improve and learn leads directly the company to create value. The processes that are related with innovation and continuous learning (learning and growth) can affect the efficiency of the businesses' operation. Furthermore, it can guarantee the cost reduction and product differentiation in order to meet customized requirements. Thus, the financial ability of the organization is boosted through gaining higher profitability and greater degree of profit (Bhagwat& Sharma, 2007).

Balanced Scorecard goal is revealed in the aspects of existing capacity of the system, and the gap between the high performance required capacities. To close capacity gaps, companies must invest to enable employees to acquire new skills, and straighten out the program and the day-to-day work of the organization Yan , and Yang., (2013).

In the learning and growth perspective companies continuously grow and innovate to be the best in class in supply chain practices. Firms improve their capability thereby reducing wastes and ensuring flexibility through various ways. The information capital objective has measures that include information sharing which is a key driver for improving supply chain performance and enhancing competitive advantage (Li & Zhang, 2006).

Li and Zhang (2006) continue to state that information sharing is being embraced in organizations through exploring advancements in technology such as use of the internet, intranet, databases, Electronic Data Interchange (EDI), Enterprise Resource Planning (ERP) and Distribution Requirements Planning (DRP) systems to exchange data, information and knowledge along the supply chain and in collaboration with its partners and the government,

because accurate and timely information ensures better decision making. Product innovations and redesign also adds value to customers.

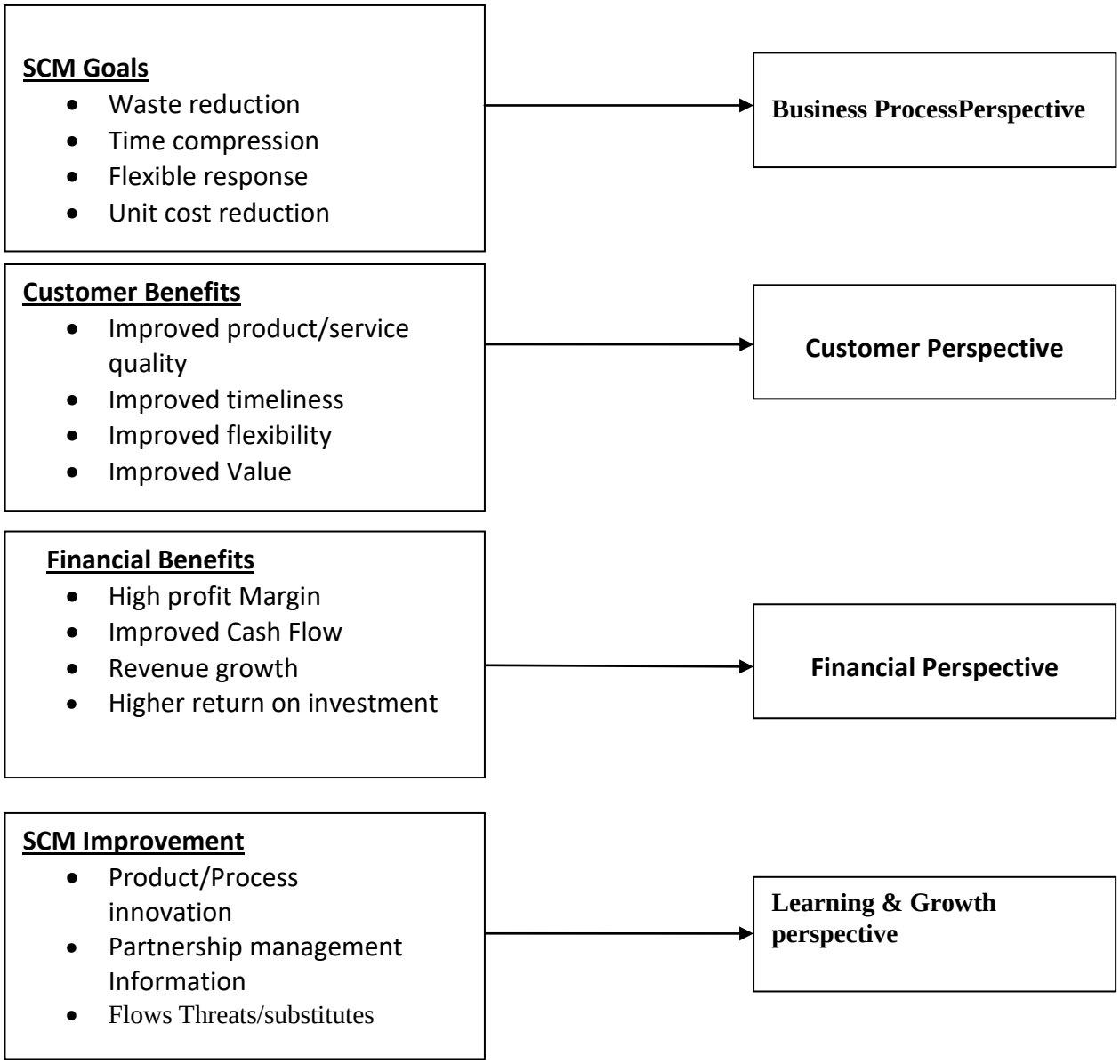
The human capital aspect involves talents and skills of the organizations employees and collaboration with its partners too. A company is as good as the people it keeps. Collaborations between the employees, performance management, compensation systems, training and development programs, should be implemented to improve the supply chain (Park et al., 2005). Good relationships with suppliers and partners should also be achieved for better results.

From the above discussion it can be hypothesized that:

H4: There will be positive and significant relationship between learning and growth practices and supply chain performance in EPSA.

2.2.4. Linking Supply Chain Management to Balanced Score card

Supply chain Management Balanced Score Card



2.3. Supply Chain PerformanceMeasurement

Supply Chain Management is a key strategic factor for increasing organizational effectiveness and efficiency (Gunasekaran, et al., 2001). Performance measurement is defined as the procedure of quantifying the efficiency and effectiveness of an activity, while a performance indicator is a measure employed to quantify the efficiency and effectiveness of an action (Galankashi, M., Memari, A., Anjomshoae, A., Ma'aram, A., &Helmi, S., 2014). Whilst there are numerous indicators of performance which could be used in a company, there is a related few number of crucial dimensions that contribute to success or failure in the industry, that are called key performance indicators. Measurement of the whole SC performance is significant because measuring SC performance affects decision making through the evaluation of previous behavior and via benchmarking Galankashi, M. et al (2014)

KPIs can be defined as a set of indicators used to measure the success of a company through the measurement of the performance of a particular activity or process. They are not predetermined, but may change depending on the evaluation criteria or priorities that the company associates with each area Paddeu, D. (2016)

The KPIs are used to understand the extent to which an area or process is working against the objectives that the company is responsible to achieve. Based on the values of the indicators, the manager can decide which action has to be taken to improve the performance of a specific area. They can therefore be considered as a real decision support tool Paddeu, D. (2016)

In today's evolving world, Supply Chain Performance (SCP) is one of the key factors for enhancing organizational effectiveness and competitiveness, especially in the current era of global competition, customer awareness, technology advancement and outsourcing hence the need for accurate supply chain performance measurement tools (Park et al., 2005).

In the midst of fundamental revolution and the nature of business, for an enterprise to thrive, it has to understand how the supply chain networks work and how to make them work better (Githinji, 2010).

A key feature of present day business is the idea that it is the supply chain that competes, not the companies and the success or failure of the supply chain is largely determined in the market place by the customer (Stock, 2001).

Gunesekaran and Kobu (2007) asserted that business and environmental performance measures can be categorized in terms of quality, time, cost, flexibility and innovation. As indicated by

Sezen (2008), supply chains should be evaluated based on their ability to respond to changes in products, delivery times, volume and mix; hence flexibility. According to Petterson, (2009) the three types of performance measures identified as the necessary components of a supply chain performance measurement system are: flexibility, resource and output.

Supply chain performance can be measured both in terms of customers' level of satisfaction and the costs incurred (Estampea, et al., 2013). Customer's satisfaction level is a sign of the required standard service level of a company, which is closely related to the whole performance of its supply chain (Chan, 2003). Evaluating supply chain performance is a complex mission, because it is a transversal process involving several actors cooperating to achieve given logistical and strategic objectives (Estampea, et al., 2013) Improving supply chain performance has become one of the critical issues for gaining competitive advantages for companies (Cai, et al., 2009).

2.4. Conceptual framework of the study

From the above literature, it is evident that supply chain performance is influenced directly by the BSC perspectives. The financial, customer, internal business, learning and growth perspectives directly influence efficiency and effectiveness of the supply chain. Chia et al. (2009) found that the measurement of supply chain performance could be improved by using a more balanced approach as provided for by the BSC framework. The integration of the measures allows management to assess the overall competitiveness of the entire supply chain and determine internal variables that need improvement. Effective supply chain performance can be improved by having a blend of financial and non-financial measures (Gautreau&Kleiner, 2001) and the BSC framework measures up to those requirements. Therefore, applying the BSC can improve the supply chain performance of EPSA B/Dar Hub thereby increasing the customer satisfaction, minimize costs, employ growth opportunities, and adding value to products and service of pharmaceutical industries.

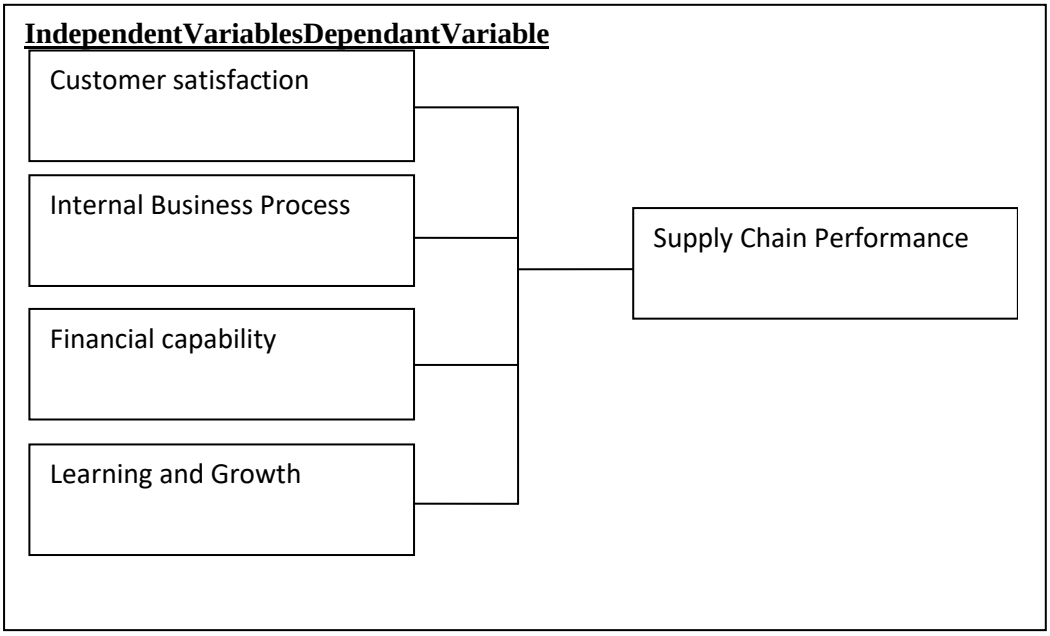


Figure.1 Research frame work; adopted from (Ashioya 2013)

Chapter Three: Research Methodology

3.1 Introduction

The mainpurpose of this study was to measureperformance of EPSA B/Dar Hubsupply chain management using Key Performance indicators of BSC dimensions and identifies the performance and come up with the finding and recommendation on the best practices.

3.2 ResearchApproach

There are two basic research approaches, quantitative and qualitative approach. The third is mixed research approach which is formulated by combining the two approaches mentioned above to get the advantages of both. Quantitative approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis using statistical tools and qualitative approach is concerned with subjective assessment of attitudes, perceptions, opinions and behavior.

Generally, qualitative techniques including focus group discussion, key informant semi structured interviews and unstructured in-depth interviews are used for data collection (Kothari, 2004).Quantitative research as a formal, objective, systematic process are used to describe and test relationships and examine cause and effect interactions among variables. Surveys may be used for descriptive, explanatory and exploratory research. A survey is used to collect original data for describing a population too large to observe directly (Kothari, 2004). A survey obtains data from a sample of the population and infers that the population will have the same characteristics as that of the population.

Again according to Creswell (2013), there are three research approaches: qualitative, quantitative, and mixed methods. Mixed research methods are used when it incorporates elements of both qualitative and quantitative approaches and the findings are also more reliable using one of the approaches. Mixed research design is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone. The most appropriate research approach for this study wasquantitative research approach. The researcherhas been collected quantitative data using self-administered questionnaires with

five points Likert scale distributed personally to the subjects by the researcher to measure the perceived performance of supply chain in the case pharmaceutical companies.

3.3 Research Design

The design of this study was a descriptive study. In this study, a structured questionnaire was developed. The rational for this approach and the quantitative questionnaire was that the quantitative (descriptive survey) method allows direct investigation of the perception of respondents involved in SCM practices (Leedy et al, 2005). According to Leedy et al (2005), survey research is a commonly used method and large amount of information can be collected and quantitatively described. It also allows a researcher to measure what cannot be observed and investigate relationships between dependent and independent variables. The main reasons the researcher to select the descriptive survey approach is that: This survey method was the most economical method of obtaining information via email and postal service from a sample that is geographically widespread area (Leedy et al., 2005). Descriptive survey study is not time taking to collect data from large populations .Therefore, the questionnaires was carefully designed to reflect each of the themes in the research‘s conceptual framework and its elements as well as with the research aim and objectives.

Descriptive research can be either quantitative or qualitative. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form. Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 1984). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Because the human mind cannot extract the full import of a large mass of raw data, descriptive statistics are very important in reducing the data to manageable form. When in-depth, narrative descriptions of small numbers of cases are involved, the research uses description as a tool to organize data into patterns that emerge during analysis.

Most quantitative research falls into two areas: studies that describe events and studies aimed at discovering inferences or causal relationships. Descriptive studies are aimed at finding out "what is," so observational and survey methods are frequently used to collect descriptive data (Borg & Gall, 1989).

The descriptive function of research is heavily dependent on instrumentation for measurement and observation (Borg & Gall, 1989).

3.4Sample size and Sampling method

3.4.1. Bahir Dar Hub Pharmaceutical supply Agency Hub

The Data is collected both from primary and secondary sources. Primary datawas collected by conducting structured questionnaires with 97employees of EPSA B/DAR HUB purposively selected based on the objectives of the thesis that were directly link with the supply chain management. Structured questionnaires were used to measure the supply chain performance and employees from different departmentswereselected using purposive sampling,were asked to collect the data.

3.5. Sources and tools for data collection

There are two types of data i.e. primary and secondary data that are used in the study. The primary data that is collected are by using structured questionnaires. Using structured questionnaires the data were collected from Bahir Dar Hub Pharmaceutical Supply Agency employees. Questionnaires were used to collect primary data from employees of EPSA B/DAR HUB (153), 97 employees purposively selected employees who had more concept about the supply chain management of the Agency.

Moreover In order to improve my study and strength my findings, articles, academic journals, and useful texts were used from different sources, such as library, journals, academic books and relevant documents from the factory and concerned government bodies of the industry.

3.6Instruments and data collection techniques

The procedure for the data that was collected using questionnaire is first the respondents were communicated to get their consent. Once their consent was known, the prepared questionnaires were distributed to each participant by appreciating their participation and devoting their precious time for the research. The questionnaires were collected by checking the completeness of the data. Finally the activities were accomplished by appreciating the respondents.

3.7Reliability and Validity of Instruments

Golafshani (2003) defines reliability as the extent to which results of a study are consistent over time and there is an accurate representation of the total population under study. According to Tokeet al., (2012), the aim of reliability analysis is to find the extent to which a measurement procedure produced the same result if the process is repeated over and over again under the same conditions. The most common technique used in the literature to assess the scales

reliability and stability is use of the Chronbach Alpha Statistics. Chronbach Alpha should be above 0.70 to produce a reliable scale and any scale with Chronbach Alpha less than this standard should be eliminated Sekaran (2005). In this study the Cronbach Alpha was 0.948 and the reliability of the study was fulfilling the cronbach alpha statics.

Table3.1 Cronbach's alpha

	Variables	**Cronbach's Alpha**	**Number of Items**
1	Financial measures	0.811	5
2	Customer measures	0.812	5
3	Internal Business process measures	0.837	5
4	Learning & Growth measures	0.845	5
5	Supply chain performance	0.753	5

Source: own survey result 2020

3.8 Ethical clearance

In this study, Ethical clearance letter was obtained from the Department of Logistics and Supply chain managementof the College of Business and Economics, Bahir Dar University. After that permission was asked from Bahir Dar EPSA management and Branch manager. After getting consent from the Branch manager data collection was started. It was also told to each respondent that the information that is collected will be kept confidential.

3.9 Method of data analysis and Interpretation

After the data were collected, it was edited (checking completeness), classified, tabulated, coded, and reviewed in order to ensure the required quality, accuracy, consistency, and completeness. Thereafter, the quantitative data were coded, i.e., the edited raw data were converted into numbers and then tabulated to count the number of samples falling into various categories and then they were transformed into Statistical Packages for Social Sciences (SPSS), version 21 and were analyzed.

Data analysis is the systematic organization of data and testing of the research hypothesis or finding answers to the research questions using the data. It involves Classifying of questions, coding and categorizing of themes according to the most frequently used phrases or generative themes that would later be tabulated into frequencies and percentages for easy interpretation of the findings. As stated in the foregoing discussions, quantitative data was collected. In analyzing

the quantitative data, both descriptive and inferential statistics were used whenever appropriate. Frequencies and percentages were used to describe the respondents' demographic information and professional characteristics. The other partsalso used statistical tools such as multiple regressions, and correlations. A p-value of 0.05or less was considered statistically significant.

Chapter Four: Data presentation, Analysis and Interpretation

4.1 Introduction

As indicated in the previous chapter, the main attempt of this study was to measure the performance of pharmaceutical supply chain of EPSA B/Dar Hub using BSC model. After the primary and secondary data were collected using questionnaire, in this chapter the analysis and discussions for research findings obtained from the data collection instrument were presented. The analysis and discussion begins with the questionnaires' response rate followed by the descriptive statistics of the respondent's demographic information and descriptive statistics of BSC dimensions. The result of the Pearson correlation was also reportedand finally the results of hypothesis testing results were presented.

4.2 DescriptiveAnalysis

The study sought to find out the extent to which the EPSA B/Dar Hub has measured BSC measures to evaluate its supply chain performance or to what extent does the BSCMeasures have been implemented in the supply chain at EPSA B/Dar Hub. The respondents gave their responses on a scale of 1-5 where 1 represents to a strongly disagree and 5 to a strongly agree.

For each of the BSC approach measures that affect Supply chain performance of EPSA B/Dar Hub, the mean score for each item under each variable along with average mean score were calculated to measure the company's overall supply chain performance.The mean is measure of central tendency which provides general picture of the data and the result of mean of respondents in each perspective of supply chain performance measures.The mean score result with its standard deviation for each constructs are organized and analyzed as follows.

4.2.1 Demographic Characteristics

This section provides data on the general characteristics of the respondents who participated in the study.Observing the demographic trend or characteristics of our sample population before starting the data analysis is useful to make the analysis more meaningful for the reader. This part of the questionnaire requested limited amount of information related to personal and demographic status of respondents.

The importance of demographic examination in this research is to describe the characteristics of the sample, like proportion of male and female,age, educational background and experience of respondents in the pharmaceutical sector. Accordingly these variables are summarized and described in tables shown below.

Response Rate

The respondents of this study come from the employees of EPSA B/Dar Hub found in Warehousing & Inventory Management, Forecasting & Market Shaping, Finance Administration, General Service, HR, Management of Information Systemand Distribution Departments. Among the 97 survey questionnaire forms distributed, all employees were participated and respond the questionnaires. The final number of valid questionnaires was 97 usable questionnaires available for analysis. The respondents were given 3days to respond.

Table 4.1: Response Rate

Number of Replies	97
Not Returned and/or Declined to Participate	0
Total Number of Forms Distributed	97
Response Rate (%)	100% (overall response rate)
	100% (effective response rate)

Source: own survey Result 2020

The over all response rate of 100% (97 responses/97 questionnaires) and 100% effective rate of response, which is comparable to similar studies in the field. So we can say that the response rate of the study is high enough to analyze the collected information.

4.2.3 General Information of the Respondents

Table 4.2 Respondents Demographic Information

Item	Category	Frequency	Valid Percent
Sex	Male	64	66%
	Female	33	34%
	Total	97	100%
Age	Less than 25 years	8	8.2%
	26-34 years	58	59.8%
	35-44 years	20	20.6%
	45-54 years	10	10.3%
	Over 54 years	1	1.0%
Educational Background	Certificate	3	3.1%

	Diploma	24	24.7%
	BA/BSC Degree	56	57.7%
	MSC/MA	14	14.4%
	Total	97	100%
Work Experience in Pharmaceutical sector	1-5 Years	43	44.3%
	6-10 Years	38	39.2%
	11-15 Years	9	9.3%
	Above 15 Years	7	7.2%
	Total	97	100%

Source: Own SurveyResult, 2020

From the above table 4.2 the first item of demographic characteristics is gender. The gender distribution of respondents of EPSAB/Dar Hub covers 66% male while 34 % of the respondents covers female. This shows the gender distribution of sample is dominated by male.Thedemographic statistics of the respondents age among the 97 respondents, most of them 58 (59.8%) were between 26 and 34 years old, followed by 20(20.6%) were between 35 and 44years old. In terms of educational background the majority 56 (57.7%) have BA/BSc degree and the rest 3, (3.1%), 24(24.7%) and 14(14.4%) were educated to the Certificate level, Diploma and Masters degree respectively. This is an indication that the employees of EPSA B/Dar Hub are matured and educated

Enough to serve the company from customer perspective, company's financial perspective, internal business process perspective and learning and growth perspective.

The last item was work experience in pharmaceutical sector, regarding to this 43(44.3%) of them have 1-5 years while 38(39.2%) of them have work experience of 6-10 years and 9(9.3%) have work experience of 11-15 years and 7(7.2%) of them have work experienceof above 15 years. From the above information the majority of respondents had served the company above five years and this helped the researcher to measure the performance of supply chain using the response of respondents with broad knowledge of the company system and overall culture.

4.2.4.Financial Perspective

The First Research Question is: to what extent does the company measures the following financial measures to evaluate its supply chain performance?

Table 4.3: Financial Perspective

Code	Item	Minimum	Maximum	Mean	Standard Deviation
FP1	EPSA has good cash flow management	1.00	5.00	2.9278	1.10158
FP2	The organization is performing cost saving initiatives	1.00	5.00	2.8144	1.09287
FP3	The organization is using Profit margins in determining its performance	1.00	5.00	2.8041	1.06692
FP4	There is clear Financial goals in determining its performance	1.00	5.00	2.6186	1.12216
FP5	There is Suitable pricing policy at EPSA regarding its supply chain performance	1.00	5.00	2.8969	1.11322
Average Mean				2.81236	1.09935
Valid N(list wise)	97				

Source: own survey Result 2020

From the table 4.3 above, it was agreed by the respondents that good cash flow management mean of (2.9278) is the most important measures followed by Suitable pricing policy, performing cost saving initiatives, profit margins, and clear Financial goals of the company with mean score of (2.8969, 2.8144, 2.8041 and 2.6186) respectively in measuring supply chain performance. It is thus evident that measuring the cash flow management and the suitable pricing policy are measures that are extensively used in the EPSA B/Dar Hub supply chain which helps in knowing the financial capability of the company followed by cost saving initiatives, profit margins, and clear financial goals of the company.

Generally, as the average mean score (2.81236) of all financial measure items shows the company is moderately considering financial measures for evaluating its supply chain performance. It is thus evident that measuring the cash flow management and the suitable pricing policy are measures that are extensively used in the EPSA B/Dar Hub supply chain which helps in knowing the financial capability of the company followed by cost saving initiatives, profit margins, and clear financial goals of the company.

Generally, as the average mean score (2.81236) of all financial measure items shows the company is moderately considering financial measures for evaluating its supply chain

performance. This study supports previous article written by Bhagwat& Sharma (2007) which states that supply chain survival is measured by cash flow, success by growth in sales and operating income and prosperity by increased market share and return on equity and capital employed and studies done by Yan, and Yang (2013).

4.2.5 Customer Perspective

The 2nd research question is: how do you rate the following customer perspective measures to measure the supply chain performance of the company?

Table 4.4 Customer Perspective

Code	Item	Minimum	Maximum	Mean	Standard Deviation
CP1	The company delivers on time to customers	1.00	5.00	2.8041	1.09582
CP2	EPSA uses promotion to gain customers	1.00	5.00	2.0000	1.05079
CP3	EPSA provides better service than competitors to customers	1.00	5.00	2.4433	1.05049
CP4	Assessment of customer satisfaction is performed at EPSA	1.00	5.00	2.6495	1.12769
CP5	Customer retention strategies are implemented at EPSA	1.00	5.00	2.2887	1.07003
Average Mean				**2.4371**	**1.07897**
Valid N(list wise)		97			

Source: Own survey Result 2020

From the table 4.4 above, it was agreed by the respondents that Delivering on time to customers, Assessment of customer satisfactionand provides better service than competitors to customers with mean value of (2.8041, 2.6495, and 2.4433 respectively) are the very important factors to be considered in improving supply chain performance of the company. This is followed by Customer retention strategies anduses promotion to gain customers with mean value of (2.2887 and 2.0000 respectively).

The average mean score (2.4371) of all customer measures shows that in the Agency was moderately considering customer measures as influential measures in evaluating their supply chain. This supports the findings of (Arik, 2006) who asserted that one of the changes in business practices dictated by the transition from the industrial age to the information age is the shift of enterprises from product-focused to being customer-focused.

4.2.6 Internal business Perspective

The 3rd research question is: How do you rate the following internal business measures to measure the supply chain performance of the company?

Table 4.5: Internal business processperspective Measures

Code	Item	Minimum	Maximum	Mean	Standard Deviation
IBP1	EPSA implement internal processes that aim to reduce logistics,inventory,warehouseand transportation costs	1.00	5.00	2.6804	.91908
IBP2	There is accuracy in forecasting demand	1.00	5.00	2.4124	1.03835
IBP3	The company concerns about experience sharing with suppliers	1.00	5.00	2.3402	1.09817
IBP4	EPSA is responsive to urgent deliveries	1.00	5.00	2.9072	1.12807
IBP5	There is strategic alliance with supply chain actors	1.00	5.00	2.6495	1.09963
Average Mean				**2.5979**	**1.05665**
Valid N(list wise)		**97**			

Source: own survey Result 2020

From the above table 4.5 one can infer that responsive to urgent deliveries followed by reduce logistics, inventory, warehouse and transportation costwith mean value of (2.9072and 2.6804) respectively was considered by company as basic internal process measures for the whole supply chain. This was followed strategic alliance with supply chain actors,accuracy in forecasting demandand concerns about experience sharing with supplierswith mean value of (2.6495,2.4124 and 2.3402) respectively.

Being supported by average mean value of (2.5979) the above results shows that, the company was measuring internal business process measures moderately in measuring its supply chain performance.According to this finding EPSA performance supports the studies done by Chih, et al (2016) and Fabio, et al., (2015), which proofs that the beginning of the value chain of the

internal business process perspective is the innovation process, which clarifies the current and future customer needs. Brewer &Speh(2000) also reveals that flexibility can be achieved through measures that include how the supply chain responds to urgent orders, forecasting demand by understanding customers and their ordering patterns which corresponds my finding at EPSA.

4.2.7 Learning and growth Perspective

The researcher sought the view of the respondents on the extent to which the learning and growth measures below are implemented and measured in determining the supply chain performance, which hold on the 4th research question: How do you rate the following learning and growth measures to measure the supply chain performance of the company?

Table 4.6 Learning and growth measures

Code	Item	Minimum	Maximum	Mean	Standard Deviation
LGP1	There is suitable training programs at EPSA	1.00	5.00	2.1031	1.06541
LGP2	Creative ideas to develop supply chain performance are promoted and implemented	1.00	5.00	2.2371	1.03856
LGP3	The company concerns about adding value to employees is encouraging	1.00	4.00	1.8660	.98561
LGP4	There is positive company concern about experience sharing with suppliers	1.00	5.00	2.1856	1.03410
LGP5	EPSA uses latest technology for research &development	1.00	5.00	2.4742	1.14649
Average Mean				**2.1732**	**1.05403**
Valid N(list wise)		97			

Source: own survey Result 2020

As stipulated in the above table 4.6, uses latest technology for research &development, Creative ideas to develop supply chain performance,company concern about experience sharing with suppliers,suitable training programs and company concern about adding value to employees, with mean value of (2.4742, 2.2371, 2.1856, 2.1031 and 1.8660) respectively were considered as the basic measures that have been used by EPSA B/Dar Hub in measuring its supply chain performance. With the support of average mean value of (2.1732), this is an indication that EPSA B/Dar Hub embraces technology advancements and good relationships with its employees and supplierstherebyproviding a conducivesupply chain environment for the smooth flow of

operations.The ability of organization to innovate, improve and learn leads directly the company to create value. The processes that are related with innovation and continuous learning (learning and growth) can affect the efficiency of the businesses' operationBhagwat& Sharma (2007) which is supportive of this study. Yan, and Yang., (2013) on their study recommends that close capacity gaps, companies must invest to enable employees to acquire new skills, and straighten out the program and the day-to- day work of the organization. This study at EPSA supports this recommendation.

4.2.8 Supply chain performance

The respondents were also requested to confirm the overall performance of the company's Supply chain in using BSCmeasures. What is your view for the following supply chain performance measures?

Table 4.7 supply chain performance measures

Code	Item	Minimum	Maximum	Mean	Std. Deviation
SCP1	The company clearly communicates its goals and strategies to employees	1.00	4.00	1.8660	.98561
SCP2	EPSA has good relationship with other supply chain actors	1.00	5.00	2.6495	1.09963
SCP3	The company has good flow of information exchange within supply chain	1.00	5.00	2.4742	1.14649
SCP4	There is a positive practice at EPSA efficiently in utilizing its resources(human, financial and material)	1.00	5.00	2.8144	1.09287
SCP5	The organization is concerned about responsiveness to customer requirements	1.00	5.00	2.4433	1.05049
Average Mean				2.4495	1.07502
Valid N (listwise)		97			

Source: own survey Result 2020

As shown in the above table 4.7, Efficiency of the company in utilizing its resources (human, financial and material), relationship with other supply chain actors and Information exchange

within the supply chainwith mean value of (2.8144, 2.6495, and 2.4742) respectively shows moderate increment in the overall company's Supply chain performance. This is followed by responsiveness to customer requirements (with mean of2.4433)and clearly communicates its goals and strategies to employees (with mean of 1.8660).

Therefore, from the above result it can be concluded that the four BSC measures implemented by the company has resulted in moderate increment of company's' supply chain performance.

4.3Correlation Analysis

Under research investigation the researcher is expected to understand concepts beyond the means and standard deviations of the dependent and independent variables so researcher need to know how one variable is related to another which comes with the concept of correlation. Correlation is the relationship between two variables. So, we would like see the nature, direction, and significance of the bivariate relationship of the variables used in the study.According to (Cochran, 1977), positive values indicate positive correlation between the two variables,whereas negative values indicate negative correlation. A zero value indicates that there is no associationbetween the two variables. When r = (+) 1, it indicates perfect positive correlation and when it is (–) 1, itindicates perfect negative correlation.

Spearman's correlation coefficient is a statistical measure of the strength of a monotonic relationship between paired data. In a sample it is denoted by and is by design constrained as follows

$$-1 \leq r_s \leq 1$$

And its interpretation is similar to that of Pearsons, e.g. the closer r_s is to +1 the stronger the monotonic relationship. Correlation is an effect size and so we can verbally describe the strength of the correlation using the following guide for the absolute valuer_s: 0.00-0.19 "very weak",0.20-0.39 "weak",0.40-0.59 "moderate" ,0.60-0.79 "strong" 0.80-1.0 "very strong"

Table 4.8Spearman’s correlation

Correlations							
			Financial perspective	customer perspective	Internal business process perspective	Learning &Growth perspective	Supply chain performance
Spearman's rho	Financial perspective	Correlation Coefficient	1.000	.520**	.666**	.544**	.698**
		Sig. (2-tailed)		.000	.000	.000	.000
		N	97	97	97	97	97
	customer perspective	Correlation Coefficient	.520**	1.000	.667**	.645**	.808**
		Sig. (2-tailed)	.000		.000	.000	.000
		N	97	97	97	97	97
	Internal business process perspective	Correlation Coefficient	.666**	.667**	1.000	.679**	.796**
		Sig. (2-tailed)	.000	.000		.000	.000
		N	97	97	97	97	97
	Learning &Growth perspective	Correlation Coefficient	.544**	.645**	.679**	1.000	.802**
		Sig. (2-tailed)	.000	.000	.000		.000
		N	97	97	97	97	97
	Supply chain performance	Correlation Coefficient	.698**	.808**	.796**	.802**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	
		N	97	97	97	97	97
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: own survey Result 2020

The BSC variables (independent variables) analyzed against supply chain performance (dependent variable) revealed that there exists a positive relationship between the variables.

The table above shows that supply chain performance is significantly correlated to the balanced scorecard variables as Financial perspective (r=0.698, p<0.01) Customer perspective (r=0.808, p<0.01), Internal Business process perspective (r=0.796, p<0.01) and Learning and Growth perspective (r=0.802, p<0.01). They imply that the success of supply performance is associated with all aspects of the customer perspective, internal business processes, financial perspective and learning and growth perspective.

4.4 Regression Analysis

4.4.1 Normality Assumptions test

Normality is used to describe a symmetrical, bell shaped curve which has greatest frequency of scores in the middle (center). In an ideal world our data would be distributed symmetrically around the centre of all scores.

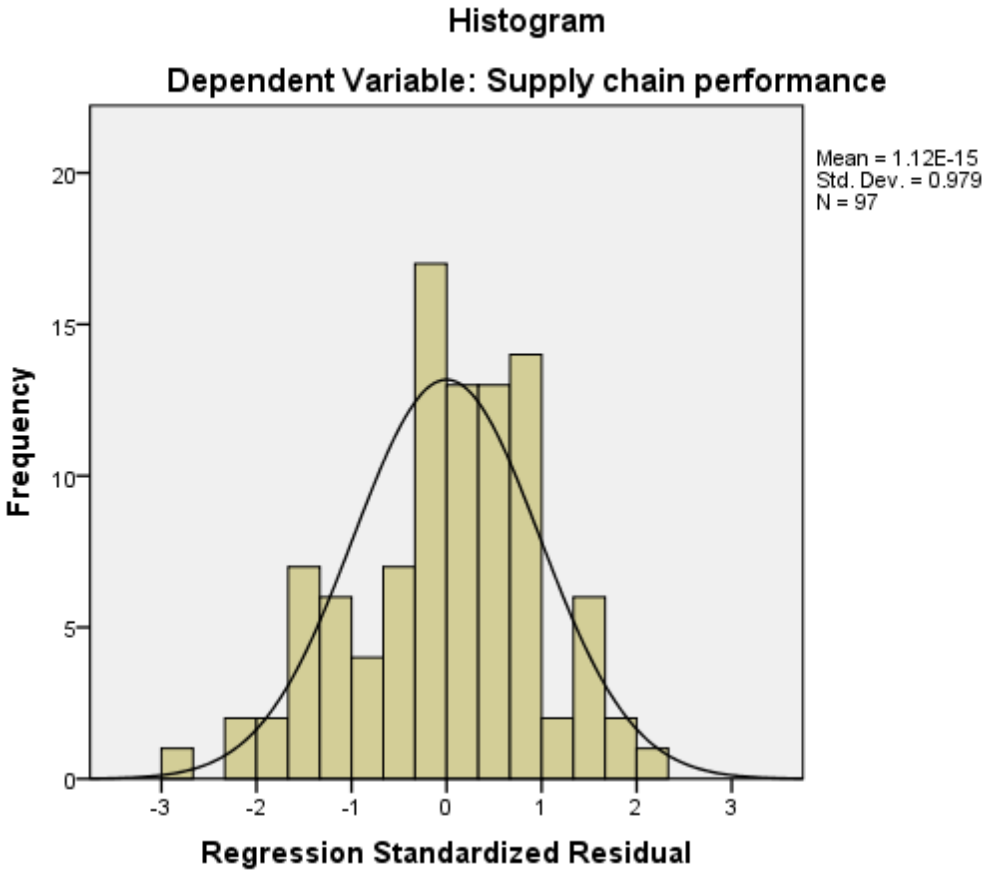


Figure 1 Normality test for Residuals

If the residuals are normally distributed, the histogram should be bell-shaped. Bryman,(1988). Therefore, from the above figure 1, the Histogram is bell-shaped; this implies that the residuals are normally distributed. Hence, the normality assumption is fulfilled in this study.

4.4.2 Linearity assumption test

In linear regression analysis it is assumed that there is a linear relation between the predictors and thedependent variable. This study measured the linearity by testing the goodness of fit of the model byconducting ANOVA test.

The test hypothesis is:

H0: The model is not a good fit

H1: The model is a good fit

Alpha = 0.05

Table 4.9 Linearity assumption test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.183	4	12.046	141.723	.000[b]
	Residual	7.820	92	.085		
	Total	56.002	96			
a. Dependent Variable: Supply chain performance						
b. Predictors: (Constant), Learning &Growth perspective, Financial perspective, customer perspective, Internal business process perspective						

Source: own survey Result 2020

From the above table 4.8, we concluded that the model is a good fit. Since, the p-value, 0.000 is less than α= 0.05. This result indicates that there is a linear relation between the dependent variable and the independent variables

4.4.3 Multi colonarity assumption test

Table 4.10 Multi colonarity assumption test

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.063	.114		.554	.581		
	Financial perspective	.180	.049	.195	3.666	.000	.536	1.866
	customer perspective	.265	.059	.283	4.519	.000	.387	2.587
	Internal business process perspective	.156	.065	.169	2.410	.018	.311	3.220
	Learning &Growth perspective	.382	.059	.414	6.514	.000	.375	2.665
a. Dependent Variable: Supply chain performance								

Source: own survey Result 2020

According to (Cochran, 1977) stated that presence of multi-collinearity can be detected by just lookingat variance inflation factor (VIF) value of each explanatory variable. That is, if VIF is more than 10,then, it signifies that there is interdependency among independent variables. Table 4.9 indicates thatthe VIF values of financial measures, Customer perspective, internal business process perspective and Learning and growth perspective and its VIF values are below 10. Hence, the multi-collinearity assumption isfulfilled in this study.

4.4.4 Statistical Test of Hypotheses: Regression Analysis

Regression analysis is a statistical analysis that allows a researcher to test for statistical relationship between dependent variable and a set of independent variables and estimate the independent effect of each independent variable on the dependent variable. Four hypotheses

were raised for this study. They were tested at 0.05 significant levels and confidence level of 95%. The researcher conducted a regression analysis to test the research hypotheses that illustrate the relationship between supply chain performance (dependent variable) and four other independent variables from BSC perspectives, namely financial perspective (FP), customer perspective (CP), internal business process perspective (IBPP), and Learning and growth perspective (LGP). The aim of the regression analysis was to come up with a suitable regression equation that can be used to explain the BSC variables that affect supply chain performance (SCP) in EPSAB/Dar Hub. The researcher proposed the following multivariate regression equation:

Table 4.11: model summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.928[a]	.860	.854	.29154	.860	141.723	4	92	.000
a. Predictors: (Constant), Learning &Growth perspective, Financial perspective, customer perspective, Internal business process perspective									

Source: own survey Result 2020

The first measure in the model summary table is called 'R'. This is a measure of how well ourpredictors predict the outcome. The model summary shows that there is a strong linearrelationship between supply chain performance and the four independent variables (R= .928).

The model summary result shows that a regression model with R square .860 implies that the percentage of variation in supply chain performance explained by the four BSC variables accounts for 86%, and other unexplored variables may explain the variation in supply chain performance for 14%.

In addition, the adjusted coefficient of determination (adjusted R-square) indicates the model fit. The adjusted R^2 revealed that 85.4% of the variance in supply chain Performance was explained by the regression model. This is, as the name implies, a correction to R square, which takes into account that we are looking at a sample rather than at the population. The R^2 value is adjusted for the degrees of freedom and thus referred to as the adjusted R^2. This is provided because the actual value of R^2 obtained with a given sample often overestimates the population value for R^2.

The adjusted R^2, however, has been adjusted downwards to closely approximate the population value.

For this reason the value to adjusted R^2 is normally smaller than the value of R^2 (Hatcher &Stepanski, 2001). The p-values of the t-tests were at the 1% level of significance for all variables.

Table 4.12: Analysis of variance (ANOVA)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.183	4	12.046	141.723	.000[b]
	Residual	7.820	92	.085		
	Total	56.002	96			
a. Dependent Variable: Supply chain performance						
b. Predictors: (Constant), Learning &Growth perspective, Financial perspective, customer perspective, Internal business process perspective						

Source: own survey Result 2020

The above table shows that the Analysis of Variance (ANOVA) F-ratio is 141.723 at 4 and 92 degrees of freedom is statistically significant at 95% confidence level. It is significant at $p<.001$ (because the value in the column labeled Sig. is less than .001). This result tells us that there is less than a 0.1% chance that an F-ratio this large would happen if the null hypothesis were true. Therefore, we can conclude that our regression model results in significantly better prediction of supply chain performance than if we used the mean value of SCP. In short, the regression model overall predicts SCP significantly well (the model is good fit).

Table 4.13: Regression Coefficients

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.063	.114		.554	.581
	Financial perspective	.180	.049	.195	3.666	.000

	customer perspective	.265	.059	.283	4.519	.000
	Internal business process perspective	.156	.065	.169	2.410	.018
	Learning &Growth perspective	.382	.059	.414	6.514	.000
a. Dependent Variable: Supply chain performance						

Source: own survey Result 2020

In the Regression Model, the un-standardized coefficients (b) of financial measures,customer measures, internal business measures andlearning and growth measures show the relative influence on Supply chain performance. Learning and growth measures (b=0.382) has the most positive influential effect on supply chain performance, followed by, Customer measure, financial measures and internal business measures (b = 0.265, b = 0.180, and b = 0.156) respectively.

Each of these beta values has an associated standard error indicating to what extent these values would vary across different samples, and these standard errors are used to determine whether or not the b-value differs significantly from zero. As we saw in the above table, a t-statistic can be derived that tests whether a b-value is significantly different from 0. Well, in multiple regressions it is easiest to conceptualize the t-tests as measures of whether the predictor is making a significant contribution to the model. Therefore, if the t-test associated with a b-value is significant (if the value in the column labeled Sig. is less than .05) then the predictor is making a significant contribution to the model. The smaller thevalue of Sigand the larger the value of t, the greater the contribution of that predictor. For this model, the learning and growth measure (t (96) = 6.514, p < .001), customer measures (t (96) = 4.519, p < .001), financial measures(t (96) = 3.666, p < .001) and internal business process measures (t (96) = 2.410, p < .001) are all significant predictors of supply chain performance. From the magnitude of the t-statistics we can see that the learning and growth measures had a higher impact, whereas the rest three has relatively hadsimilar medium impact. Therefore, the regression equation becomes:

Y = a + β 1*X1 + β 2*X2 + β 3*X3 + β 4*X4 + e

Which is Y=3.512+ .0511x1 + .010x2 + .277x3 + .231x4

Where Y- dependent Variable, supply chain performance X1- Financial perspective

X2- Customer perspective X 3- Internal business processes

X4- Learning and growth

Supply chain performance = 0.63 +0.180 (financial perspective) + 0.265 (customer perspective) + 0.156(internal business perspective) + 0.382(learning and growth perspective). Thus, internal business perspective, leaning and growth perspective, financial and customer perspective found to be statistically significant in influencing supply chain performance.

4.4.5 Discussion of the Findings

The discussions of the above result findings in relation with the objectives and hypothesis of the study are presented as follows:

The basic objective of this study is to measure the supply chain performance of pharmaceutical supply agency from BSC model perspectives, which is followed by four specific objectives depending on four BSC model perspectives. From the regression analysis it was found that these four perspectives of BSC model (i.e., Financial, customer, internal business process and learning and growth measures) strongly affects and contributes to supply chain performance of EPSA B/Dar Hub. The relationship and effects that these factors have on EPSA B/Dar Hub's supply chain performance are discussed under the following hypothesized hypotheses.

H1: There will be positive and significant relationship between financial capacity and supply chain performance in EPSA.

The first specific objective of the study was to measure the performance the company's Supply chain from financial perspective. To attain at this objective a regression beta coefficient was computed and the result of the regression analysis of the above model as stipulated in table 4.11, shows that financial measure of BSC model has a positive and statistical significant effect on EPSA B/Dar Hub's supply chain Performance (b= 0.180 with $p<0.001$). This means that the better the company measure the financial measures like using profit margin, clear financial goals, cost saving initiatives, cash flow management and suitable pricing policy to evaluate its SCP the better the company's overall supply chain performance will be.

This finding was supported by a study carried by (Yan H., and Yang Z., 2013) which revealed that, financial performance measurement method to reveal the overall strategy of the alliance and its implementation and enforcement are to contribute to the improvement of the supply chain.

Supporting this, the study by Ashioya I., (2013) shows that fulfilling customers' needs and supply chain partners ensures financial success as the overall aim is improving the financial capability of the whole supply chain entities. Hence, **hypothesis 1 is accepted**.

H2: There will be positive and significant relationship between customers focused practices and supply chain performance in EPSA.

The second specific objective of the study was to measure the performance the company's Supply chain from customer perspectiveaffects its supply chain performance. To this end, it was found that the firm's concern for customer has a statistically significant positive impact on its overall supply chain performance with ($b = 0.265$, with $p < 0.001$). This means the more the company give emphasis to customer service the better their entire supply chain performance will be. Previous studies conducted in the past shows that, customers are concerned for the lead-time, the quality of products and services, the company's performance service and the cost effectiveness (Bhagwat& Sharma, 2007).

As studied by (Hasan B., et al 2016) one of the main objectives of supply chain management isto meet customer needs. Low performance under this category is a significant indicator ofdecline in future, even though the present financial situation might appear good.

Supporting this, the study by Brewer &Speh, (2000), shows that product leadership objectivecan be achieved through measures such as good product quality and flexibility of products by providing a range of products that the customer wants. The different demands, desires and idiosyncrasies of customers all along the supply chain must be understood and managed effectively for companies to score better supply chain performance.

Based on the above discussion and result of the regression analysis we can say that concerns for customers by companies will result in positive effect on supply chain performance of the company. Hence, **hypothesis 2 is accepted.**

H3: There will be positive and significant relationship between effective internal business process and supply chain performance in EPSA.

The third specific objective of the study was to measure the performance the company's Supply chain from internal business process Perspective. Based on the result of the regression analysis of the above model stipulated on table 4.11, internal business process has positive and significant effect on supply chain Performance (b= 0.156 with p<0.001). This result is supported by past studies. As studied by (Chih C., et al 2016; Fabio D., et al., 2015), the beginning of the value chain of the internal business process perspective is the innovation process, which clarifies the current and future customer needs. New products are developed to meet and create customer needs. Next, the operation process focuses on providing products and services to existing customers. Finally, the post-sales service process, which includes defective products and returns, is accounted for. For example, the BSC can overcome the challenge of high processing costs through the internal business perspective by having measures such as reduced order cycle time and efficient capacity utilization throughout the supply chain.

Supporting this (Brewer &Speh, 2000 and East African Breweries, 2010) stated that, improving inventory management can be achieved through measures such as inventory costs incurred in the supply chain including purchasing, holding, shortage and ordering costs. Flexibility can be achieved through measures that include how the supply chain responds to urgent orders, forecasting demand by understanding customers and their ordering patterns. Hence, **hypothesis 3is also accepted**.

H4: There will be positive and significant relationship between learning and growth practices and supply chain performance in EPSA.

The fourth specific objective of the study was to measure the performance the company's Supply chain from learning and growth Perspective. Based on the result of theregression analysis of the above model stipulated on table 4.11, learning and growthhas a great statically positive and significant effect on supply chain Performance (b= 0.382 with p<0.001). This means the company's ability to innovate, improve and learn leads directly the company to createsupply chain value.

Bhagwat& Sharma, (2007), stated that, the processes that are related with innovation and continuous learning (learning and growth) can affect the overall efficiency of the businesses' operation.

Moreover, in the learning and growth perspective companies continuously grow and innovate tobe the best in class in supply chain practices. Organizations improve their capability thereby reducingwastes and ensuring flexibility through various ways. The information capital objective hasmeasures that include information sharing which is a key driver for improving supply chainperformance and enhancing competitive advantage (Li & Zhang, 2006). Hence, **hypothesis 4 is also accepted**.

Above all, The data findings analyzed shows that taking all other independent variables atconstant, a unit increase in customer satisfaction leads to a 0.265 improvement in supply chain performance of EPSA B/Dar Hub 's supply chain. A unit increase in innovation, learning and growth will lead to a 0.382 increase in company's supply chain performance. A unit increase in financial strength will lead to a 0.180 increase in company's supply chain performance. Andlastly keeping other variables remain constant; a unit increase in internal business process will lead to a 0.156 increment in EPSA B/Dar Hub's supply chain performance. It is therefore evident thatthe BSC measures affect the supply chain performance at EPSA B/Dar Hub.

Chapter: FiveSummaryof Major Findings, Conclusions and Recommendations

5.1 Summary of Majorfindings

Based on presentation of the results, the findings of the study are summarized as follows. To measure the supply chain performance of the EPSA B/Dar Hub the researcher looked for BSC metrics to measure the agency performance in a balanced approach. The study also showed the relationship that exists between supply chain performance and balanced score cared metrics.

In order to achieve these objectives, data were collected from the employees of EPSA B/Dar Hub. The data were processed in quantitative approaches andcorrelation and Regression analysis was also used.

From the demographic characteristics of respondents' the dominant percentage were male (66%) and the remaining (34%) were female respondents.

The minimum educational background of respondents was certificate (3.1%) and the remaining respondent's minimum educational backgrounds were Diploma, we can say that educated respondents were participated in the study.

When we come to work experience of respondents' 55.7% of them have served more than 6years in the pharmaceutical sector and this had its advantages to the study as measurement needs enough knowledge and exposure of the sector. As a result the validity of the research will increase and the findings can describe the existing situation of the sector.

From financial perspective, the study confirmed that EPSAB/Dar Hub has implemented measures such as suitable pricing policy, cash flow management and clear financial goals for measuring their supply chain performance. This has enabled EPSA B/Dar Hub to ensure financial success the company through improved profits and revenue. This result is supported by regression analysis, that financial measures have significant positive effect ($b= 0.180$, $p<0.001$) on supply chain performance of the company.

From customer perspective, it was evident from the study that using promotion to gain customers, providing better service than competitors, Delivering on time to customers, and customer satisfaction that the company has with customers is used to determine the supply chain performance of the company. This finding is also supported by regression analysis. There is a significant positive relationship ($b= 0.265$, $p<0.001$) between customer measures and supply chain performance of EPSA B/Dar Hub. This prove the argument by Brewer &Speh (2000)

who assert that the different demands, desires and idiosyncrasies of customers all along the supply chain must be understood and managed effectively.

From internal business process perspective, the study also established that measuring the internal business process like reducing logistics, inventory, warehouse and transportation costs, accuracy in forecasting demand, experience sharing with suppliers, responsive to urgent deliveries and strategic alliances with supply chain actors by the company has enabled performance increment in company's supply chain. This implies that delivery of products from the agency to the respective health facilities' stores is done in a timely manner. This result is supported by regression analysis which revealed that there is positive and statistically significant ($b= 0.156$, $p<0.001$) relationship between internal business process measure and supply chain performance.

From learning and growth, it was also confirmed by the study that EPSA b/Dar Hub has moderately measured learning and growth measures for improving its supply chain performance. The study shows that considering measures likesuitable training programs,Creative ideas to develop supply chain performance,adding value to employeesand using latest technology in research &development of the company enabled performance increment in company's supply chain. This result is also supported by regression analysis. It was found that there is positive and statistically significant relationship ($b= 0.382$, $p<0.001$) between Learning and growth with supply chain performance.

The study reveals that from independent variable measures model, the financial measure ($t (96) = 3.666$, $p < .001$), learning and growth ($t (96) = 6.514$, $p < .001$), customer measures ($t (96) = 4.519$, $p < .001$) and internal business process ($t (124) = 2.410$, $p < .001$) are all significant predictors of supply chain performance. From the magnitude of the t-statistics we can see that the Learning and growth measures had a higher impact, whereas the rest three has relatively had similar medium impact.

5.2 Conclusion

This research was conducted in an attempt to measure the supply chain Performance of Ethiopian pharmaceutical supply agency the case of EPSAB/Dar Hub by using BSC model.

The supply chain performance of EPSA B/Dar Hub has a moderate performance when evaluated by employees

Out of the four perspectives of BSC, customer and learning and growth were rated lower. Lower result in these to implies the company didn't satisfy customers and employees.

Though the performance of the company has increased from time to time customers are not still satisfied and they demand improvement in price, good communication system, high response to their order and availability of goods.

Generally, the study findings have suggested that the levels of supply chain performance is moderate in the case of EPSA B/Dar Hub in terms of the four perspectives of balanced score card as the perceived evaluation of the respondents imply. The performance from time to time is comparatively in a better position.

5.3 Recommendations

As revealed from the findings of the study, levels of supply chain performance of the company is approximately moderate.

Hence EPSAB/Dar Hub shall give special emphasis in the improvement the supply chain performance in line with its corporate and functional strategies and objectives in order to operate according to international best practices and consistently offering quality products at affordable price to the society.

The study indicated that the company needs to have strong customer relation management and learning and growth to improve the poor customer relation management system and create better internal and external integrated supply chain.

The agency needs to create alignment between existing performance measurement tools and the strategy of the company.

The study advocated that a lot of emphasis need to be directed to supply chain management and performance measurement based on balanced approach and the agency should maintain the effort made on customer perspective and learning and growth perspective to enhancing performance of their supply chain which are still need to be improved.

The agency should also have performance measurement system that includes different stakeholders and supply chain actors to improve the communication gaps and enhance the backward and forward integration.

According to Kaplan and Norton, the balanced scorecard is not only a measurement tool, but also communication tool. Therefore, the agency shall implement BSC as a measuring tool to solve the communication gaps and to communicate its strategy.

A lower result in customer perspective and learning growth impliesagency didn't satisfy the customers and employees. At the same time employees can also run out of the company and this may distort the tacit knowledge of employees.

As shown in the result of the study the financial measures are in a better position which means the agency gives more focus to the financial performance and hence the management should give attention to all perspectives of BSC to bring a balanced supply chain performance.

Finally the researcher recommends the agency to apply BSC as performance measuring system in order to have a balanced approach in measuring performance and to improve the poor performance related to customer perspective and learning and growth perspective.

5.4Limitations of the Study and Recommendation for further study

Like many research works, this particular study is also subjected to some limitations. First and for most, this study does not comprehensively capture all supply chain actors as applicable to supply chain management, rather it made emphasis in measuring supply chain performance of the agency from employees point of view. In order to benefit from comprehensive measurement future studies shall consider other supply chain actors. In addition to the aforementioned limitation it needs also to have more similar agencies perspective in order to consider it as apharmaceutical supplier.

For further studies there is need to carry out similar in other supply agencies and pharmaceutical industries in Ethiopia, especially for those who use the BSC as their performance evaluation tool. There is need to carry out a comprehensive study on the relationship between the BSC and the organization's performances to enable employees know the role they play in the achievement of the organization's objectives.

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Appendix

Appendix I: Questionnaires

BAHIR DAR UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Masters of Arts in Logistics and Supply Chain Management

Title: Measuring Supply Chain Performance in Ethiopian Pharmaceutical Supply agency Using BSC Model: The Case of Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub

Dear Respondent,

I am undertaking a master's thesis on the title **"Measuring Supply Chain Performance In Ethiopian Pharmaceutical Supply Using BSC Model: The Case Of Ethiopian Pharmaceutical Supply Agency Bahir Dar Hub"** as a partial fulfillment of requirement for Masters of Arts in Logistics and Supply Chain Management.

I do believe that your response and participation in the survey questionnaire is a great input to the research study. So that, I kindly requests you to participate and answer all thequestions.

The purpose of the questionnaire is fully for academic (will not be used for any other purposes). Your responses will be kept confidential and will not be traceable to the individual respondents. Please be informed that it is not necessary to write your name and the company as well.

Completing the questionnaire will take about 10 minutes. I kindly ask you to give a few minutes from your busy schedule since your participation is valuable for the success of the study.

Finally, I thank you very much! Your efforts are greatlyappreciated!!! Don't hesitatetocontactmeasnecessaryintheaddresses.

AzemerawManaye

Email:azmanaye7@gmail.com

Self-Administered Questionnaire

Questionnaire for EPSA B/Dar Hub Employees

PART I. RESPONDANT'S PROFILE

The following questions are about the respondents profile in the organization. Kindly indicate the appropriate characteristics of the respondent's profile using (√) on the check box.

1. Gender

1. Male ☐ 2.Female ☐

2. Age

1. Less than 25Years ☐ 2. 26-34Years ☐

3. 35-44Year ☐ 4. 45-54Years ☐

5. Over 54 Years ☐

3. EducationalBackground

1. Certificate ☐ 2. Diploma ☐

3. BA/BSCDegree ☐ 4.MSc/MA ☐

5. OtherSpecify _____

4. How many years have you been employed in the pharmaceuticalsector?

1. 1-5Years2.6-10 Years ☐ ☐

3. 11-15 Years ☐ 4. Over 15Years ☐

PART II: Financial Perspective

To what extent does your company use the following **financial measures** in determining its supply chain performance? (Please Tick where appropriate, if strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, strongly agree=5)

	Measures	1	2	3	4	5
5	EPSA has good cash flow management					
6	The organization is performing cost saving initiatives					
7	The organization is using Profit margins in determining its performance					
7	There is clear Financial goals in determining its performance					
8	There is Suitable pricing policy at EPSA regarding its supply chain performance					

If others (please specify)……

……..

PART III: Customer Perspective

To what extent does your company use the following **customer measures** in determining supply chainperformance? (Please Tick where appropriate, if strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree=5)

	Measures	1	2	3	4	5
9	The company delivers on time to customers					
10	EPSA uses promotion to gain customers					
11	EPSA provides better service than competitors to customers					
12	Assessment of customers satisfaction is performed at EPSA					
13	Customer retention strategies are implemented at EPSA					

Others (please specify)……..

……

PART IV: Internal Business process Perspective

To what extent does your company use the following **internal business process measures** in determining its supply chainperformance? (Please Tick where appropriate, if strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, strongly agree=5)

	Measures	1	2	3	4	5
14	EPSA implement internal processes that aim to reduce logistics, inventory, warehouse and transportation cost					
15	There is accuracy in forecasting demand					
16	The company concerns about experience sharing with suppliers					
17	EPSA is responsive to urgent deliveries					
18	There is strategic alliances with supply chain actors					

Others (please specify)……..

……

PART V: Learning and Growth Perspective

To what extent does your company use the following **learning and growth measures**in determining its supply chainperformance?(Please Tick where appropriate, if strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, strongly agree=5)

	Measures	1	2	3	4	5
19	There is suitable training programs at EPSA					
20	Creative ideas to develop supply chain performance are promoted and implemented					
21	Company concerns about adding value to employees is encouraging					
22	There is positive company concern about experience sharing with suppliers					
23	EPSA uses latest technology for Research &Development					

Others (please specify)

……
……

PART VI: Supply Chain Performance

What is your view for the following supply chain performance measures? (Please Tick where appropriate, if strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, strongly agree=5)

	Measures	1	2	3	4	5
24	The company clearly communicates its goals and strategies to employees					
25	EPSA has good relationship with other supply chain actors					
26	The company has good flow of Information exchange within the supply chain					
27	There is a positive practice at EPSA efficiently in utilizing its resources (human, financial and material)					
28	The organization is concerned about responsiveness to customer requirements					

Others (please specify)

……
…….

Thank you for taking time to answer the questionnaire

Annex

Annex I: Ethical clearance letter

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BAHIR DAR UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS

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DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

☎ LSCM 0588 20 99 74
☎ COBE 0588 20 93 11
✉ 3052
E-mail- bdulscm@gmail.com
ፋክስ Fax: 251 (08) 20 22 34

Ref. Nº : CoBE/LSCM / 064 /12

Date: 09 / 10 /2012

To: - **Ethiopian Pharmacetical Supply Agency**
Bahir Dar

Subject: Request for Ethical Clearance

Dear Sir/Madam

The Department has been in the critical importance of exposing students to practical research work in different organizations. The student whose name **Azemeraw Manaye** is pursuing his study in Logistics and supply chain Management which incorporates thesis work. We would like to ask your sincere cooperation in allowing the student to conduct a thesis work on **"Measuring Supply Chain Performance of Ethiopian Pharmacetical Supply Agency Using BSC approach: The case of EPSA Bahir Dar HUB".**

We appreciate your cooperation with regard to supporting the student in undertaking the thesis work.

With regard!

Ephrem Shebeshe
Head Logistics & Supply Chain Management Department

1- To HR dean
2- To FCB ,,
3- WIM ,,
4- Dist ,,
For the necessary support
09/10/2012

CoBE LSCM
Bahir Dar University College of Business and Economics Department of Logistics and Supply Chain Management