

## Outsourcing a Means for Strengthening the Health Care Supply Chain Management: A Narrative Review

Habtamu Solomon Mengistu<sup>1\*</sup>, Manaye Tamrie Derseh<sup>1</sup>, Abinet Abebe Zewdu<sup>1</sup>, Kaleab Taye Haile<sup>2</sup>, Biniam Bahiru<sup>3</sup>, Abyou Seyfu Ambaye<sup>3</sup>

<sup>1</sup>Department of Pharmaceutics and Social Pharmacy, Mizan-Tepi University, Mizan-Aman, Ethiopia; <sup>2</sup>Department of Pharmaceutics and Social Pharmacy, Gondar University, Gondar, Ethiopia; <sup>3</sup>Department of Pharmaceutics and Medical Equipment Management, Mizan-Tepi University, Mizan-Aman, Ethiopia

### ABSTRACT

Outsourcing is the movement of business processes from inside the organization to third party service providers who in turn owns, administrates and manages the selected process, based upon defined and measurable performance metrics. The aim of this study is to see whether outsourcing is useful in strengthening the health care supply chain management. Narrative review was conducted by analyzing secondary data from four research databases and non-published documents available. Through the searching, 209 articles were downloaded and 42 recently published articles were selected after abstraction with application of inclusion and exclusion criteria for this paper. Now days, low and middle-income countries are achieving remarkable scores in their health care supply chain because of outsourcing. Outsourcing is being used as a means to further strengthen the health care supply chain system in aspects of cost savings, transportation, achieving core business competency, increased product quality, availability, affordability, increasing business process competitiveness and the like. To ensure strengthening of the health care supply chain there should be a third-party logistician led distribution of commodities. It is important for the health care supply chain team member to make cost-benefit-risk analysis and consider core competency tasks as best requirements before employing outsourcing.

**Keywords:** Outsourcing; Outsourcing supply chain; Health care supply chain; Health care supply chain outsourcing; Outsourcing importance

## INTRODUCTION

### Background

Outsourcing is the movement of business processes from inside the organization to third party service providers who in turn owns, administrates and manages the selected process, based upon defined and measurable performance metrics. Outsourcing supply chain functions is increasingly common and important in low and middle-income countries like Ethiopia to capture experience on the technology, expertise and resources of best performing firms [1,2].

Outsourcing all or much of a company's logistics operations to a specialized company is a common trend in logistics service provision of today. The third party, that receives the activities to be performed, provide functions like transportation or freight management, warehousing, distribution management and freight consolidation to the client company [3].

To achieve customer satisfaction and overall performance, a company can maintain growth goals while avoiding standard business bottlenecks through outsourcing services that helps the company to focus on its core competencies, increasing the speed of business performance, reduce operational cost and most importantly key employees released from performing noncore (administrative) activities [4].

**Correspondence to:** Habtamu Solomon Mengistu, Department of Pharmaceutics and Social Pharmacy, Mizan-Tepi University, Mizan-Aman, Ethiopia, Tel: 251921406505; E-mail: habtamu2383@gmail.com

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In the health sector, to fulfill the health care needs of the population, the government should strengthen the supply chain sector to be strong, more efficient, more effective, agile and responsive as Senegal who outsources family planning and becomes effective [5]. These effective supply chain systems must be able to respond to changes in health priorities, demographics, manufacturing, technology, and financing.

## LITERATURE REVIEW

Despite some appreciable practices in supply chain by outsourcing to third party there are still gloomy problems in supply chain. From these cost of products, distribution (transportation and handling), availability, freight management, currency problem, infrastructure, work force, political and managerial issues take the lead in all countries including Ethiopia [6-10].

This article helps firms to improve their supply chains to become highly competitive in industrial market and strengthen their service level performance by outsourcing. It also shows the requirements to outsource activities and services based on available resources needed to meet strategic goals and objectives through the development of core competencies, which helps them to maintain their competitive advantage [11,12].

## METHODOLOGY

This narrative review is conducted based on analysis and interpretation of the literature that is available on the concept of health care supply chain outsourcing. Analysis and reviews obtained through the search of articles on outsourcing of supply chain with the keyword search terms of 'outsourcing', 'outsourcing importance for health care supply chain', 'health care supply chain outsourcing', and 'strengthening health care supply chain by outsourcing' were included.

The search, limited to papers written in English, carried out on January 4-7, 2022 using PubMed, BioMed Central, Science direct and Google scholar search engines. The search in all search engines resulted in 209 articles (BMC-39, Google Scholar-63, PubMed-48, Science Direct-59), and 42 articles (BMC-2, Google Scholar-1, PubMed-5, Science Direct-34) were selected during abstractions which were used for this review paper.

In addition to the articles and books found from the listed databases used, the study also used one non-published document (book) entitled Logistics Management, A green supply chain perspective with case applications in Ethiopia by Matiwos Ensermu (PhD in logistics and supply chain management), which is accredited by AAU and availed for educational purpose.

The processes of abstracting the literature were done based on the preset inclusion and exclusion criteria. These criteria were listed as follows.

### Inclusion criteria

Studies which fulfill the following criteria were selected:

**Study design:** all studies

**Study settings:** all countries

**Period of study:** January 2012–January 7, 2022

**Publication status:** all published and non-published documents

### Exclusion criteria

Studies which fulfill the following criteria were not selected:

**Period of study:** before January 2012

**Language of published articles:** other than English

The literature abstraction procedure is mapped and each article analyzed based on the inclusion and exclusion criteria through the following procedures.

## RESULTS AND DISCUSSION

There are various ways of successful Third-Party Logistician (3-PL) engagement in public health care supply systems. In due process the supply chain maturity level should be achieved by the outsourcing system. Survey data collected from 250 subsidiaries of publicly listed manufacturers in China showed that Outsourcing Management Process (OMP) affects the effectiveness of the logistics system in terms of cost, delivery and performance which decides the failure or success of outsourcing initiative [13,14].

Significant decrease in logistics expenses can be reached by transfer of part or the main functions on outsourcing e.g. the finding in the Western Cape Province, South-Africa indicates that even if the cost of vaccines rose from 120,750\$- 822,429\$, fee charged by the private sector Logistics Service Provider (LSP) remained unchanged at 6% between the years 2005 and 2010, which is considered economical.<sup>15</sup> Competition under outsourcing enables the supply chain to procure product at a lower cost, which in turn yields a higher order quantity of the product. Stochastic programming model can be used to select the cheapest outsourcing partner [15-22]. Additionally, outsourcing to a 3-PL can function well if external coordinator can ensure low knowledge transfer cost along the supply chain [23].

Outsourcing has advantage towards regulating temperature in storage and transportation of some commodities. In the Western Cape Province, South-Africa, over the 8-months monitoring period, the temperature maintenance of the vaccines averaged to be 4.9°C (4.4°C–5.6°C range) for storage at the provincial level warehouse which meets the WHO criteria. And in 85% of deliveries, vaccines were transported under good temperature control conditions.

Outsourcing can improve health commodity availability and help strengthen the health care systems e.g. the women of Senegal are benefiting a lot from the fruit of outsourcing in that availability of contraceptives is ensured. The overall effectiveness of supply chain management achieved by outsourcing can exceed performance of government managed supply chain if it is well controlled and properly employed.

In Colombia, it was found that outsourcing can relieve man made and natural disasters and increase performance of

future food aid distribution operations in response to larger scale disasters. Especially in developing countries where frequent civil war occurs, outsourcing could play vast roles in ensuring food aid distribution for the victims like children, women and the old.

In order to enable a supply chain to achieve maximum competitiveness in business processes it should introduce strategic outsourcing to work on value creation which considers customer satisfaction in line with profit maximization. The 2013 survey indicates that the percentage of value creation achieved by outsourcing has reached at higher level. On average, 36% of manufacturing and distribution is being outsourced which this indicates that manufacturing and distribution are cores of the supply chain to achieve a strong supply chain [24]. Outsourcing supply chain with financial constraint can be coordinated with three methods which are revenue sharing contract, output penalty contract and cost sharing contract. Cost sharing contract allows members of the firm to improve profitability while the rest does not allow [25].

To ensure the strengthening of health care supply chain there should be a 3<sup>rd</sup> party logistician led distribution of commodities. Now day's low and middle-income countries are achieving remarkable scores in their supply chain because of outsourcing. Since 2012, Nigeria achieved remarkable progress with the performance of its vaccines supply chain and cold chain. One of the progresses is cost savings which is being generated from redesign and outsourcing of the entire system.<sup>9</sup> The other progress in Nigeria, Kano state is the contract with the non-governmental organization called eHealth Africa for outsourced distribution helped vaccines to be transported directly from state or zonal cold stores to an around 300 health facilities in fully monitored cold chain vehicles. In 2013, in provincial health authorities in Tete in northern Mozambique there was problem of transportation of vaccines and antiretroviral to rural health centers but when a local 3-PL was introduced it effectively served more than 1.5 million populations [26].

The Information Technology (IT) capabilities of third-party enable total profit optimization of the supply chain by applying different logistics contract structures namely contingent contract and profit-sharing contract structures [27]. Fresh product supplies face challenges of decaying, deteriorating in quantity and quality until it reaches the end customer. In order to solve this problem 3-PL can play the major role by eliminating double marginalization and resulting in good coordination of the supply chain members [28,29].

Local 3-PL providers play a number of roles in strengthening the health care supply chain e.g. in Malawi, contraceptives and some essential medicines (including antimalarial drugs) are distributed by Cargo Management Logistics (CML), a local private company that has grown from 46 to 112 employees in 4 years since taking on this work; in Nigeria, Imperial Health Sciences manages warehousing services and deliveries by 7 locally owned and financed transport companies, which together employ more than 270 people to deliver products to 5,000 points of care.

Dependence on the 3-PL providers initiates firms to concentrate on their own supply chain. One of the coping strategies to

reduce dependency on 3-PL is guanxi system (a cultural tradition in China of interpersonal connections that facilitate a mutual exchange of favors). Based on data collected from 149 3-PL users in China, it was found that guanxi is a more potent in highly uncertain environment [30].

Outsourcing strengthens the environmental policies. Enterprises may be stimulated to focus on green technological progress and environmental protection through favorable mechanisms like incentives [31-34]. Green supply chain is now a days a burning issue in the world supply chain management which outsourcing should consider.

Although outsourcing is beneficiary in most of the aspects of supply chain there are a number of risks that need to be identified and evaluated when going through it. It is possible to assess the impact of outsourcing practices on the supply chain capabilities based on the hybridization of Fuzzy Cognitive Maps (FCM), Analytic Hierarchy Process (AHP) and Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE) frameworks. Stochastic fuzzy multi-objective programming model can be used to manage qualitative and quantitative risks in supply chain outsourcing [35,36]. Deciding at which stage to outsource and selecting the right type of a supplier is a very important issue when faced with a set of suppliers with different characteristic [37,38]. For small scale industries automated self-adaptive multi-agent system has been proposed to help them to make appropriate decision of outsourcing and mitigate the uncertainty in supply chain [39].

One of the major risks of outsourcing is leakage of Intellectual Property (IP). In order to mitigate this risk, a clustering algorithm. Is developed to decompose and allocate the product components regarding IP protection issue [40,41]. Knowledge of certain procedures may be completely lost in the process of outsourcing. Fewer job opportunities may occur as a result of technology access and outsourcing supply chain functions in industrialized countries like Canada [42].

## CONCLUSION

In the analysis it was found that low and middle-income countries benefited a lot by outsourcing part or all of their logistics functions. Although outsourcing has remarkable benefits, there are a number of risks that need to be identified and evaluated when going through it. Deciding at which stage to outsource and selecting the right type of a supplier is a very important to mitigate some of the risks due to different characteristics of suppliers. Therefore, it is important for the health care supply chain team member to make cost-benefit-risk analysis and consider core competency tasks as best requirements before employing outsourcing. The study also found some negative outcomes of outsourcing which indicates that further research is needed on this area to confirm such findings.

Stakeholders and government bodies of countries like Ethiopia should be able to encourage local private operators to perform major tasks of the country; consider having a commercial 3-PL and Non-Governmental Organization (NGO) partners for those tasks that need core competency; conduct an in-depth cost-risk

benefit analysis before outsourcing; acquire commitment, clear roles and accountability mechanisms, robust technical design, and effective multi stake holder collaboration is required to meet the needs of their citizens and further strengthen the health care supply chain management.

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All authors contributed to data analysis, drafting, or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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