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The attached educational project, by Kofi A Boateng, entitled *Supply Chain Optimization: The Use of Different Strategies to Effectively Improve Manufacturing and Distribution*, when completed, is to be submitted to the Graduate Faculty of the University of Wisconsin- Platteville in partial fulfillment of the requirements for the (MASTER OF SCIENCE IN INTEGRATED SUPPLY CHAIN MANAGEMENT) degree.

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**Supply Chain Optimization: The Use of Different Strategies to Effectively Improve
Manufacturing and Distribution**

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Master of Science in Integrated Supply Chain Management

Supply Chain Management

By

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Abstract

Specialists in the supply chain management career field are often underrated when it comes to the level of impact they have on organizational success, but yet plays major roles in meeting and exceeding expectations across departments through efficiency. Supply chain optimization comprises of all functions within organizations that impacts the flow of goods and services in a good way. As technology continues to advance throughout the world, more companies are realizing the opportunities that the optimization of their supply chain presents. Such recognitions have allowed organizations to develop meaningful structure, enhanced manufacturing, and increase customer satisfaction. This research covers cost saving opportunities for organizations through the process of thoroughly reviewing their supply chain. In the study, emphasis is placed on supply chain strategies, and research conducted by Gartner Incorporated to grade and understand companies and their supply chain. Finally, the research concludes with recommendation for future processes to minimize challenges and continue to improve supply chains.

Supply Chain Optimization: The Use of Different Strategies to Efficiently Improve Manufacturing and Distribution

Introduction and Problem Statement

The need for supply chain optimization has increased over the years, but yet companies continue to struggle with needed adjustments to limit spending while focusing on enhancing their capabilities. Cost savings is often overlooked by the general public when it comes to business growth, but the ability to do so does present sustainable progress for organizations. Research shows one sector that has proven to be vital when it comes to organizational growth and competitive advantages over the years from a business standpoint is the overall supply chain process of companies.

Supply chain improvement is very important, and has advanced throughout the years to meet demands. Nonetheless, despite improvement in distribution, organizations today continue to struggle with cost savings. They also fail to take advantage of the different concepts that could positively impact their supply chain. This is mainly because most management teams are oblivious to the value that a well-organized supply chain brings to their business. But to improve the level of knowledge towards the supply chain, there are improvement steps that needs to be taken to overcome challenges. It begins with an organization's customer relationship management process. This is mainly because demand is driven by consumer needs, and depending on the level of demand, a way to address how products and services flow will impact the supply chain.

Purpose of Study

When it comes to well-organized supply chains, larger corporations have goals to quickly provide customers with product or services with a thorough process to seek cost reduction. For most businesses, the process of effectively managing the flow of goods is driven by technological advancement. The past decade have shown the importance of effectively managing the supply chain with the rapid growth of companies like Amazon. Why is this so important? Markets today are based on copycat processes to not only remain competitive but to also find new ways to get ahead. For companies like Amazon, as a result of their success, the development of supply chains and their optimization process has continued to add value.

Meeting consumer demands can be done effectively by making it as convenient as possible. The utilization of resources such as quick delivery services and e-commerce is vital in meeting demands. Businesses who take the process of improving their supply chain serious remain competitive, especially considering the strength level of the markets. However, some organizations struggle to find ways and means to optimize their supply chain. And the main reason behind such failures is resources and personnel who are educated in the supply chain field. There is a reason why big companies have strong supply chains and continue to allocate funds to that sector. Supply chain optimization is considered to be the most efficient use of resources that are involved in satisfying a customer order throughout a network of companies subject to restrictions and limitations on the use and flow of these resources (Hassini, 2008).

Significance of Study

The ability of some businesses to take advantage of being cost effective does not go unnoticed in companies, especially when quarterly financial reports are reviewed. Having the

right management team in place with a focus on ensuring there is a good flow of goods in a company is a great start in optimizing a supply chain. It is important to keep in mind that such process is not limited to manufacturing companies, but also includes service organizations. However, implementing concepts that have already proven to be effective does lower risks of failing. As a prime example, the lean concept is something that has been in works for decades, and has successfully impacted businesses in their supply chain. Lean supply chain management is not exclusive for those companies who manufacture products, but by businesses who want to streamline their processes by eliminating waste and non-value added activities (Murray, 2019). Such findings by authors like Murray shows the importance of ensuring supply chains are properly managed.

Assumptions

Bringing awareness to the supply chain management processes and making it a priority for firms to continue to develop is key to limiting waste. Oftentimes, companies overlook their supply chain process with little regards to the impact it has on the overall organization. Businesses put more emphasis on sales and meeting customer demands because of managerial level approach towards sales departments and driving profits. While sales is a priority, it is impacted by the supply chain as a whole regardless of the specialty of a company.

In order for a customer to feel at ease with their products, the quality of the product begins with the raw materials being used, which is then transferred to a manufacturing plant by a supplier to be produced. Once the product is manufactured, it is then distributed to customers. The point is that, as customers begin to ask questions regarding the quality of products, the overall knowledge of the different stages it goes through before receiving the product becomes

questionable. So implementing measures to enhance the supply chain is vital to the end goal of meeting demands.

Delimitation of Study

To fully understand the significance of cost savings and the impact it has on organizations, detailed explanation of cost reduction when it comes to the supply chain process must be emphasized in order to provide knowledge and better understanding on possible avenues of approach in achieving the objective of optimization. Effective measures such as outsourcing, proper management of customer demand, and inventory management must be highlighted. Ignoring such measures makes it difficult for any company to reduce cost. Additionally, the overall understanding of optimization cannot be ignored because of it plays a deliberate role in driving business growth.

Furthermore, the ability to conceptualize and develop supply chain management practices that adds value to improving performance while ensuring competitive advantage is very crucial to supply chain optimization. Important concepts to be considered are customer relationship management, strategic partnership amongst suppliers, and quality information sharing. A study written by James Rice and Richard Hoppe twenty years ago depicted what the supply chain management field faces today when it comes to competitive markets. According to Rice and Hoppe (2001), an increasingly vocal and popular sentiment holds that the nature of competition in the future will not be between companies but rather between supply chains. This means in order for a company to remain competitive, its supply chain must be well-organized and withstand possible challenges that may surface.

Being able to pinpoint the level of efficiency by which companies can use their supply chain optimization to design, manufacture, and distribute products is something that is considered by experts to be a continuous process. Nowadays, organizations work to deal with operational difficulties by developing supply chain models and enhancing their capabilities. With manufacturing companies, driving production process improvement is one of the most effective ways to increase quality, operational efficiency, and the bottom line (Team, 2019). This is important because increased competence serves companies well with a focus on the end goal, which is to meet demand and satisfaction.

Moreover, it is also important to consider the environmental impact on supply chains. Depending on the location of an organization, the ability to effectively distribute products may be challenging. The supply chain is all about maintaining a constant flow of goods. With environmental challenges, keeping distribution as efficient as possible is a must, especially considering the impact it may have on revenue. Additionally, it is important to note that the process of the supply chain in recent times has changed as it includes and heavily depends on environmental changes (Jawahar & Padmanabhan, 2020). As supply chain growth continues, such reference does not surprise most experts with knowledge in the supply chain field. There are opportunities for organizations to develop avenues that may benefit their supply chain regardless of environmental challenges. Challenges occur because of geographic location and weather impact. It is important to continue to emphasize that the reason behind why companies choose to do certain things that impacts their supply chain must be addressed to fully understand the overall process of optimizing their supply chain.

Methodology of Study

In order to further understand most challenges, a breakdown behind the history of supply chains and challenges throughout cannot be ignored. With the use of qualitative analysis, highlighted research and strategies including previous success by big companies are all supporting details that shows how far supply chain improvement has come and the importance of optimizing the supply chain as a whole. Additionally, with technological advancement, the gradual growth of the overall viewpoint of supply chain can be easily identified throughout the years. This has given all that are interested the resources and ability to further improve and expand on possible avenues that pushes that benefits the supply chain.

Business practices must be carefully reviewed to help build a process that encompasses end users which are the customers, and the suppliers supporting organizations. There must be separation of process to help organizations focus on different sectors for growth. For example, the management of returns for customers must be separated from the supplier returns. Such findings in the process of the supply chain have tremendous impact on organizations and equates to practices that impacts cost savings. Some of the business process that have been focused on in the supply chain management field are:

- Customer Service Management
- Manufacturing Flow Management
- Customer Relationship Management
- Returns management
- Supplier Relationship Management
- Demand Management
- Manufacturing Flow Management

- Order Fulfillment
- Product Development and Commercialization

When implemented properly, the above listed processes provides organizations with stability in meeting demands. It is the responsibility of any management team to take a look at the market and use appropriate practices to their advantage. As listed earlier, the business processes are not necessarily driven in any particular order, but can be prioritized based on the current stage of a firm and the trajectory they are on. Additionally, a manufacturing company will have a different strategy than a service company. There is a broad approach in addressing supply chain issues that may affect business processes.

Literature Review

Various studies show that businesses struggle to improve their supply chain because of difficulties in identifying waste problems, and allocating resources to minimize those wastes. Such business challenges continue to give management problems as companies work to improve through the process of adapting and overcoming. It is important for organizations to know how to handle such challenges. For instance, the rapid pace of technology development, miniaturization, and high-density packaging is presenting new opportunities, but with them come challenges involving traceability and quality control, both of which heavily rely upon control standards (Naisbitt, 2020). This is why different concepts have been introduced to expand the level of understanding, and find new ways to continue to improve. One of the biggest impacts on supply chains is the level of quality growth. Like all other improvement steps, supply chain waste includes products, time, and the improper use of personnel and their talent. Understanding the way in which supply a chain works and the opportunities organizations have to increase cost savings is a very important step in optimizing supply chains. In order to do so, research regarding

efficiency, development, strategies, and other improvement methods based on the structure of an organization must be identified to support the main reason why improving supply chains is a continuous but gradual process. Companies must seize the opportunity to improve, which essentially allows them to also compete marketplace.

The Impact of Efficient Supply Chain on Organizations

When dealing with the supply chain as a whole, today's global markets present a level of complexity. The complex values that impact the supply chains includes but is not limited to the limitation of costs and waste. This is why supply chain efficiency continues to be a focal point for most businesses, and must be taken seriously to allow for organizational growth. Circling back to the overall picture, it is important to remember that a supply chain can be defined as “a process with a complete set of activities wherein raw materials are transformed into final products, then delivered to customers by distribution, logistics, and retail” (Yazdani et al., 2017). In order to meet the requirement of what supply chain is considered to be, driving the efficiency of each stage is vital.

Research also shows that leveraging available resources is a must for companies to meet goals for cost savings while optimizing products. When we consider leveraging resources, supply chain finances goes hand-in-hand with organizational performance. Supply chain finance is frequently measured through the use of cash conversion cycle (Zhang et al., 2019). Used to measure effectiveness, cash conversion cycle evaluates the time in which a company can convert their cash into more cash (Mueller, 2021). This impacts the overall level of efficiency for firms. Additionally, supply chain efficiency is considered by experts to be a standard that measures performance, based on the way in which a company seeks to leverage its resources across the

board. And because of that a company cannot be complacent when it comes to ensuring there is high a level of efficiency within the organization.

Nowadays, one of the well-known methods to measure performance is with Lean Six Sigma. But different methods have been introduced over the years to help support measuring performances. Value stream mapping, the seven wastes, Kanban systems, and operational planning processes are all different ways to measure performance. As a Japanese term, Kanban is a system that is used for lean manufacturing. Part of its function is to signal the depletion of product, parts, information, or inventory and the accompanying need to produce more, in quantity defined on the Kanban cards which is a measuring tool to evaluate production (BarCharts, 2016). When measured correctly, they result in the supply chain being efficient.

Since the efficiency of a supply chain is measured by performance, addressing certain habits that may hinder the process of measuring overall performances is vital. Most organizations get complacent and use performance metrics that presents easy evaluation data, but does not capture the overall performance of their supply chain. Hence, performance metrics include both customer and internal reviews, return on investment, profits, level of production, and sales. Employment of performance metrics by companies for specific departments can present difficulties along the supply chain as well.

Having a well-organized supply chain means there is an efficient and effective collaborative effort to present results. For example, a manufacturing company may be heavily dependent on resources that lead to the reduction of operational costs. Such resources may include technology and personnel availability, which ultimately may result in a successful flow of production, to include packaging and distribution. A combined effort of putting together the

necessary resources to adhere to the possible demand of a manufacturing company in this case presents the firm the ability to remain efficient and competitive.

The evaluation of supply chain efficiency is something that often gets overlooked by management as well. This is of no surprise due to the fact that sales and earnings get evaluated annually and quarterly. To ensure there is continuous effort to keep supply chains efficient, it is important for businesses to do evaluations with real-time data. The extent and level of such process is based on the importance of gathering unusual information before problems surface. This brings us back to the significant role that workers play to help meet goals. Through people, sophisticated information networks find the adequate architecture required to help companies in achieving both short-term and long-term goals (Oliveira & Gimeno, 2014). A strong management team with an ability to detect possible issues weeks, months, or years before any negative impact is a tremendous advantage to any organization. Such detections helps with long-term bottlenecks and presents great opportunities for organizations to thrive, especially considering a production company.

Technology today has presented organizations with many effective ways to improve supply chain efficiency. With efficiency and effectiveness, long-term supply chain management heavily depends on strategic processes that are put in place by organizations. With every process, there is efficiency and effective goals to be met. For example, a lead time strategy by a company will have an efficient goal of decreasing the lead time without increasing cost, and an effective goal of minimizing the lead time regardless of cost increase.

If management can work towards minimizing lead time to meet demands without cost increase, then customer satisfaction will be higher than expected. At the same time if lead time can be minimized with cost increase, then satisfaction can still be met. The goal is to meet

demand with effective and efficient processes in place. The overall impact of an efficient supply chain also brings out the effectiveness of the strategies in place.

Development of Supply Chain Optimization

The ability for a company to have a strategy in place that identifies short-term and long-term success as it focuses on its supply chain transformation is critical. Firms continue to find that they can no longer compete effectively in isolation of their suppliers or other entities in the supply chain, and that is why having strategies in place is important (Cole, 2014). The difference between short-term and long-term strategies is based on the capabilities of the organization. Resources can help streamline the process to achieve the goals in a timely manner, without negatively impacting operations. With supply chain optimization, there are three phases to the process when developing strategies. The three phases are the design, planning, and the execution phase.

Strategically having a network that allows for easy accountability when it comes to operational requirements such as demand forecasting, transportation, and facilities is what supply chain design is about. The design of a supply chain may differ depending on the type of firm and what they specialize in. The design phase is heavily driven by the involvement of different departments. All departments in organizations are responsible for specific demand, but depends on each other to reach the overall goal of satisfying the need. For example, the delivery department of a warehouse must have connection with the sales department to be able to quickly identify the purchased product, and get it to the customer on time.

The planning phase has everything to do with the identification and creation of opportunities to optimize production and services. Optimization does not necessarily mean

increase, but drives quality as well. A company with a strong developmental plan in place for its supply chain increases its chances of succeeding in competitive markets. It is no secret that the supply chain is impacted by the economic concept of supply and demand. Supply is considered to be the amount of goods that are sold in markets, while demand refers to quantity of goods purchased by consumers (Pettinger, 2020). So coordination from within along with outside entities such as suppliers and distributors is needed for companies to meet their short-term and long-term goals.

Suppliers play a huge role when it comes to supply chain efficiency. Helping organizations meet demands by properly managing and providing raw materials based on requested quantity is very important. Because of the significance of good suppliers, a good relationship between organizations and their suppliers helps with the acquisition of quality raw materials to further help with customer satisfaction. Whenever there is poor relationship between businesses and their suppliers, it impacts the level of customer satisfaction, resulting in difficulties for organizations as they work to make profits.

The same goes for distributors as they work to sell products to retailers. The process of ensuring that there is an efficient way of distributing goods is very important. There must be a level of trust and understanding between both parties as they work together. So just like how suppliers help with supply chain efficiency, taking the planning phases seriously and being on the same page with customers or retailers is vital.

When it comes to the execution phase, there is emphasis on the important role that management must play to meet demands. Systems that are put in place to manage inventory, transportation, and delivery all play a role in the supply chain execution phase. Having a plan in place is great, but the process of executing the plan may make or break the supply chain. Since

supply chain includes extended coordination, meeting timelines based on operational requirements is vital. The execution phase relies on the planning phase, due to the fact that the planning phase sets the operational tempo before execution.

As described earlier, both short-term and long-term goals heavily impact the optimization process. And depending on the plans of an organization, some benefits may be gained earlier than expected. It is important for leaders in an organization to know how supply chain optimization can benefit their company. This is why there is emphasis on strategic planning. Strategic planning is the process of deciding on the firm's objectives (Pickett, 2014). To add on to the significance of knowing the operational requirements of an organization, depending on the firm, supply chain optimization may benefit the following:

- Efficient planning
- Enhance quality
- Increase revenue and profit
- Speed up shipping process
- Enhance customer service
- Strengthen inventory control
- Reduce cost and drive performance of partners

Before a company can reap such benefits, it must first take the necessary steps to optimize its supply chain. Optimization can be done by negotiating, meeting customer demands, improving products, properly managing outsourcing, using analytic tools, incorporating advance technology, improving communication with partners, planning for the future, and having a centralized and decentralized management programs in place depending on the organization.

When carefully evaluated, all of these steps can add value to companies and their overall operational goal.

Negotiations

Usually, people tend to think that negotiating is only done when a company seeks to work with other firms to build networks that helps improve their business. However, negotiations require more than what is discussed at the beginning of a partnership. Based on the continuous improvement process of a company and the trajectory of the overall market, renegotiations become crucial.

For example, if a company wants to decrease cost, they must be in talks with their suppliers to ensure the best possible rates are obtained. Why is this important? The driving factor of improvement is the inclusion of all parties both internal and external. Including all parties when working to improve allows for everyone to be on the same page with knowledge of the organization's vision.

Meeting Demands

Oftentimes, organization's struggle to enhance their supply chain depends on the level of demand from consumers. The service standards customers expect from any company continue to be high and they are rising (Garrett, 2020). Identifying trends through the process of customer relationship management gives organizations a clear and concise opportunity to tailor their operations to the higher demand. It is difficult for a company to continue to generate revenue if consumers require more and they struggle to meet those needs. This is why it is important for organizations to have long-term plans that align with their overall agenda of meeting customer

needs. This process of meeting demand will heavily impact the supply chain as time goes on, especially considering the distribution side of the chain.

Product Improvement

Addictive manufacturing has made it easier to innovate products and produce them at a faster rate to meet demand (Weaver, 2020). This is why for most companies, ensuring the production of high-quality products also optimizes supply chains. The ability to continue to gain services from customers heavily relies on the customer's level of satisfaction once a purchased product is used. For example, a company like Lowe's Home Improvement can gain more business from customers who are carefully guided by store associates to purchase the right product based on their needs. The reason being is that, customers who shop at home improvement stores typically requires more than one product as they work to improve their house or business. This means the likelihood of that particular customer returning to purchase more products could heavily depend on the quality level of the first product they purchased. In other words the store will be taking advantage of opportunities to maximize profit. This is why it is important for direct-line workers to have knowledge of their suppliers and manufacturer capabilities. Knowing the strengths and weaknesses of partners with regards to production allows for companies to have confidence in achieving their goals.

Outsourcing Management

There are many reasons why organizations choose to outsource. It is very important to note that outsourcing is based on agreements between two partners. This is why the negotiation part of the overall layout of the optimization process is important. Outsourcing can be one company having the other make products for them at a cheaper cost, or an outside firm providing

needed services to the other. From the business standpoint, a company that chooses to outsource usually have done their research, and feel confident with the benefits they will reap moving forward.

Some companies outsource because they do not specialize in the product or service they need. This is apparent with many companies in the United States, as they have foreign suppliers manufacturing goods at cheaper rate. Since some companies heavily rely on outsourcing to generate more revenue, ensuring that there is proper management with understanding of how to better manage outsourcing is vital. This will result in smooth flow of goods and services to help address demand.

Supply Chain Analytics

Today's technological advancement has presented organizations with the opportunity to examine and use data for improvement. Research indicates that analytics has gained a foothold in business operations (Brown, 2020). The use of analytic tools is something that big organizations continue to use for short-term and long-term projections. Because of this, analytic tools have proven to be vital in the supply chain optimization process. There are four types of analytics that experts believe positively impacts the supply chain. Cognitive, predictive, prescriptive, descriptive, and predictive analytics are four analytics used to project the goals of organizations.

Cognitive analytics uses a broad scale of data to help organizations identify difficulties within an organization. The use of cognitive analytics begins with questions that target specific parts of the supply chain, to optimize that particular sector. Predictive analytics is the process by which an organization works to try and determine the likelihood of something happening in the future. In other words risk mitigation becomes a priority and organizations become better suited

for possible outcomes. Prescriptive analytics uses data to solve problems while increasing value.

In relation to the supply chain, prescriptive analytics improves the process of working with partners along the chain to improve quality and allow a good flow of goods and services.

Descriptive analytics helps management see overall operations through the use of data, drawing awareness to what is happening or what has happened (Brown, 2020). Knowing what is going on across the supply chain based on facts is very important.

Incorporating Technology

As an organization, improving the supply chain is continuous due to competition and the ever-changing advancement in technology. However, supply chains can also be improved with the use of technology. This means adopting new technologies that deliver efficiencies and help meet changing and growing customer needs and expectations must be priority for many companies (Kumar, 2019). The ability of a management team to use technology to manage networks and partnerships is vital. The collection of real-time data with systems such as data warehousing and order processing tools helps with the optimization of any organization's supply chain. Additionally, the use of cloud systems such as oracle to work with partners and customers is something that makes it easy to process information and meet operational goals.

Communication

The ability to properly communicate is one of the most important things to do as an organization but often gets overlooked. Today, communication can happen in many different ways. The operational impact of communication extends beyond the boundaries of organizations. Business partners such as vendors and customers play major roles in how companies meet

demand. Proper communication is key to maintain operational requirements, while keeping everyone informed.

The use of emails, phone calls, and mailing services are usually tools available for managers within an organization's supply chain to use. But it is important to keep in mind the role that social media plays today with customers. Firms use social media to advertise and attract new customers. This process of keeping them informed impacts the supply chain as the overall level of interest may increase.

Planning and Future Goals

An organization with no future goal struggles to remain competitive. Proper planning allows for a company to have short-term and long-term goals. This is why whenever there is an organizational change, it begins with a vision statement to get everyone on board. Just like a company's supply chain, there must be some sort of vision set forth to ensure there is a smooth flow of goods and services. This is also why big companies usually assign executives to manage their supply chain. Since improvement is continual, it is good for companies to continue to plan effectively.

Centralized and Decentralized Management

Companies with managers who make good decisions usually thrive in markets. Having centralized management is typically used to allow for easy decision making without confusing workers involved. For supply chains, having centralized management will help with streamlining processes that helps with improvement through policies. Operationally, this drives the strategic goals set forth by the organization. Centralizing the supply chain or in a firm may not work for all organizations depending of the way in which they are structured.

Decentralized management is usually used by big firms. Unlike centralized management, decentralized management allows for feedback from employees who are involved in the day-to-day operations of a company. An organizational structure is decentralized when decision making has been disaggregated into a number of subunits, or divisions, each making its own decision (Siggelkow & Levinthal, 2003). Depending on the organization, the decentralized management process may be better suited to meet their supply chain needs as it seeks optimization.

Organizational Process of Enhancing Supply Chain Strategies

Organizations can use different managerial practices to optimize their supply chain without hindering the overall structure that they may have in place. With any business, management plans and ways in which operations are conducted impact practices. This has more to do with the roles that workers play in organizations. To understand how practices impact supply chains, it is important to review some of the strategies that companies use to enhance their supply chains. To narrow it down to manufacturing companies, the strategies are integrating sustainability into the supply chain, improving to accelerate profitable innovations, alignment of supply chain with organizational goals, having demand-driven planning models, and introducing and forming an adaptive supply chain system.

Integrating Sustainability and Supply Chain

The level of impact that employees typically have on companies is often overlooked. Social and environmental sustainability at times drives the competitiveness of most organizations. Narrowing it down to manufacturing companies, this usually impacts the efficiency of production. In theory, workers who do not only enjoy their job but also work to reach a goal usually produce good results. Sustainability is all about upholding the measures put

in place, and improving it to meet specific needs. Such cases regarding sustainability is a major concern along the lines of many supply chains.

Innovation Opportunities

Innovation has everything to do with product designs, while working to improve the final product. A combination of business models, market understanding, and technological knowledge drives innovation. Furthermore, supply chain innovation generally mean improvement in the way that supply chains operate, and more specifically, in the way that products, information, work, and funds flow along the chain (Flint, 2007). As a way of measuring and improving performance, successful innovation struggles to meet expectations without the business models, market understanding, and technological knowledge. Service based organizations tends to seize opportunities created with innovation to improve and increase their chances when it comes to competitive advantages.

Resources allocated towards innovation including personnel such as management is always needed to drive improvement. Overall, there is a strong demand for innovation, but it is built on the premises of enhancing the overall business goals, ultimately drawing in the supply chain process and the impact it has.

Aligning Supply Chain Operations with Organizational Goals

Integration of business planning practices is one of the best ways to identify some of the strategies needed to sustain a supply chain. The ability to forecast and manage budgeting is a prime example of operational planning. However, a firm can ease challenges in meeting goals by integrating the two to meet the overall operational requirement. An organization's personnel, business practices when it comes to technology and processes are all ways to fill gaps pertaining

to budgeting and forecasting. Budgeting and forecasting are two requirements that impact supply chains from the logistical standpoint, but when put into consideration, helps with aligning the supply chain focus with the overall business goal.

Demand Planning Models

Adaptation of demand planning models to help optimize an organization is a huge positive catalyst for supply chains. Demand is influenced by company offers such as promotions and pricing. It is important for companies to predict demand based on data, and get accurate predictions on planning models. Doing so will impact revenue growth and decrease shelf-life.

Forming Adaptive Supply Chain Systems

The constant change in markets presents opportunities for companies to work and take full advantage. For example, facilities such as warehouses and production plants must be managed in a way in which they can adapt to possible market changes. The same goes for operations that use models that are old to try and remain competitive. Upgrading to new systems provides better opportunities to compete. But it is important to note that adapting to the supply chain systems has everything to do with planning models that impact demand.

Lean Supply Chain and Logistics Management

The ability to add value to what is already in place is a plus considering the overall impact that competition may have on organizations. It is important to fully understand the association of manufacturing and improvement concepts such as Lean Six Sigma. According to Lawson Thurston, the methodology of Six Sigma has been adapted to other areas within business structures, making it more valuable than it was originally designed for, which was to improve manufacturing process and reduce problems (Thurston, 2006).

Study Methodology

To fully understand and identify the reason behind improvement studies, it is important to know the different strategies with supply chain improvement. There are different ways to quantify data that measures performances. First the action behind the measurement must be identified to support the overall arching performance, which in this case is based on efficiency and effectiveness.

The supply chain is made up of two types of strategies, reactive and data-driven supply chains. The difference between the two is based on the operational tempo of an organization. Some organizations rely heavily on data-driven strategies, and others do not. Depending on the type of supply chain that an organization has, the use of quantifiable data should and must be considered when making any strategic decision. As depicted in the table 1, the pros and cons between reactive and data-driven supply chain strategy shows how far companies have come, and will later support the reason behind some companies not making it on the Gartner Incorporated supply chain list.

Reactive supply chain is a strategy used to identify total cost management. In doing so, companies work to ensure that all partners involved with the flow of goods from one end to the other work to backfill inventories. The process of being reactive puts less emphasis on using data to ensure requirements are met. For example, instead of using quantifiable data from previous quarters, companies who use reactive strategies ignore the possibility of having enough inventory on hand to meet upcoming sales.

Data-driven strategies allows companies to better predict supply chain operations by using resources such as technology to gain leverage. It also allows for companies to adjust to any

challenges that may occur without completely deviating from the primary goal of the organization. Data-driven strategies are good practices for companies looking to minimize cost.

Table 1. Reactive and Data-Driven Supply Chain Strategies

Reactive Supply Chain Strategy	Data-Driven Supply Chain Strategy
Limited use of statistical data	Incorporation of new technology and best practices
Copying companies in same market	New ways in improving efficiency
Constant changes in process	Highly adaptive to any challenges
Unsatisfactory customer service	Improves outbound logistics
Lack of demand forecasting	Improved demand forecasting
Increase in unexpected costs	Reduction in cost

Procedures and Participants

To fully understand the difficulty in managing supply chains, data presented by Gartner Incorporated was used to identify top supply chains from 2018 to 2020. With an effort to meet demands, each year's rankings are based on success and practices used to measure growth and turnarounds. Customers today wants value and better offerings to be presented (Garrett, 2020). And a good way to add value and offerings is through the process of improving the supply chain. In the study, votes regarding opinions were compiled to help support the grading process that Gardner Incorporated used for their rankings.

Each year presented different companies in Gartner's top twenty-five. The year 2018 to 2020 ranked Unilever, Colgate-Palmolive, and Cisco Systems as top companies with the best supply chains. What is interesting is the fact that none of those companies regained the top position. Colgate-Palmolive went from being first to second in 2019 and 2020. This shows the level of difficulty in improving and maintaining supply chains efficiency.

After each rankings, Gartner Incorporated educates readers on key trends that stood out while working to identify their annual top supply chains. In 2020, purpose-driven organizations

had challenges identified due to the COVID-19 pandemic. These challenges impacted overall customer service as supply chains worked to use available resources as places to mass produce. In 2019, they used personalization at scale as a differentiator to grade more advanced companies as they looked to improve the customer experience (Gartner, 2020).

One of the key depictions in the tables presented and used by Gartner Incorporated is the inventory turns. In 2020, we can see that the level of inventory turns dropped from 10% to 5%, presenting a 50% drop from 2018 and 2019. Inventory turns are based on cost of goods sold for a quarter, divided by the same quarter from the previous year. With more factors such as revenue associated with inventory, the impact of global economic crisis brought forth by the pandemic was a major contributor to organizational supply chain struggles.

Partakers of the Gartner evaluation ranges from big name companies including Intel, Nike, HP Inc., Johnson & Johnson, Home Depot, and Starbucks. It also includes less-recognized companies like Schneider Electric, Inditex, 3M, Novo Nordisk, and Akzo Nobel, and Diageo. Additionally, the participants included foreign companies like Reckitt Benckiser, British American Tobacco, Alibaba, BMW, and Samsung Electronics. The diverse group of companies from 2018 to 2020 in the top twenty-five shows the significance of supply chain optimization, and the impact it can have on the global market.

It is important to also understand the degree to which companies go to increase revenue. Most of the listed companies have interests in other countries, impacting their supply chain processes as a whole. A German auto company like BMW has world-wide demands, and with that comes supply chain challenges. Shipments of parts to distribution and manufacturing plants are critical to meeting demands. This is because as an auto company, keeping up with new and previously released cars are critical. And even though BMW is one of the best auto companies

according to the Gartner rankings when it comes to supply chain, the tables depict the challenges that companies like BMW have to make it up the list.

Below are the tables showing Gartner Incorporated process and rankings.

Table 2. The Gartner Supply Chain Top 25 for 2018

Rank	Company	Peer Opinion (184 voters) (25%)	Gartner Opinion (42 voters) (25%)	Three-Year Weighted ROA (20%)	Inventory Turns (10%)	Three-Year Weighted Revenue Growth (10%)	CSR Component Score (10%)	Composite Score
1	Unilever	2,413	667	10.3%	7.5	2.6%	10.00	6.36
2	Inditex	1,254	345	16.5%	3.9	10.9%	10.00	4.85
3	Cisco Systems	785	541	7.9%	13.1	-0.4%	10.00	4.41
4	Colgate-Palmolive	898	324	17.6%	5.1	-2.2%	10.00	4.40
5	Intel	831	499	8.9%	3.6	4.8%	10.00	4.36
6	Nike	1,349	270	17.4%	3.8	6.8%	6.00	4.25
7	Nestle	1,326	426	6.4%	4.8	-0.2%	10.00	4.21
8	PepsiCo	1,094	391	7.3%	8.8	-0.6%	10.00	3.99
9	H&M	760	193	18.1%	2.8	7.8%	10.00	3.96
10	Starbucks	1,040	186	20.4%	11.8	9.2%	4.00	3.85
11	3M	783	198	14.0%	4.1	1.4%	10.00	3.56
12	Schneider Electric	737	410	4.8%	5.2	-0.5%	10.00	3.55
13	Novo Nordisk	121	49	37.9%	1.2	5.3%	10.00	3.37
14	HP Inc.	390	354	7.3%	8.4	0.2%	10.00	3.30
15	L'Oreal	999	210	9.6%	2.9	4.6%	8.00	3.26
16	Diageo	651	227	9.2%	1.0	7.6%	10.00	3.25
17	Samsung Electronics	907	117	10.7%	14.6	9.8%	9.00	3.22
18	Johnson & Johnson	880	322	6.2%	2.7	2.8%	6.00	3.08
19	BASF	470	281	6.9%	4.4	-0.5%	10.00	3.02
20	Walmart	1,416	256	6.2%	8.3	1.6%	3.00	2.98
21	Kimberly-Clark	619	133	13.6%	6.7	-1.6%	8.00	2.96
22	The Coca Cola Co.	1,558	221	4.6%	4.8	-10.1%	4.00	2.87

23	Home Depot	431	78	18.6%	5.1	6.7%	5.00	2.81
24	Adidas	821	115	6.8%	2.9	13.5%	7.00	2.58
25	BMW	679	118	4.1%	4.2	6.0%	10.00	2.45

Table 3. The Gartner Supply Chain Top 25 for 2019

Rank	Company	Peer Opinion (162 voters) (25%)	Gartner Opinion (38 voters) (25%)	Three-Year Weighted ROA (20%)	Inventory Turns (10%)	Three-Year Weighted Revenue Growth (10%)	CSR Component Score (10%)	Composite Score
1	Colgate-Palmolive	961	347	19.9%	5.0	-0.2%	10.00	4.88
2	Inditex	1,091	341	16.2%	3.8	6.5%	10.00	4.80
3	Nestle	1,262	374	6.9%	4.8	1.2%	10.00	4.27
4	PepsiCo	997	368	11.7%	9.0	1.2%	8.00	4.22
5	Cisco Systems	699	518	4.0%	10.2	0.7%	10.00	4.13
6	Intel	576	454	12.4%	3.7	9.6%	6.00	4.12
7	HP Inc.	293	353	11.7%	8.2	7.3%	10.00	3.81
8	Johnson & Johnson	737	348	7.6%	3.1	5.8%	10.00	3.80
9	Starbucks	900	167	19.3%	12.7	9.0%	4.00	3.74
10	Nike	1,194	186	13.3%	3.9	6.0%	4.00	3.73
11	Schneider Electric	677	256	5.4%	4.9	0.7%	10.00	3.71
12	Diageo	625	404	9.8%	0.9	4.3%	10.00	3.44
13	Alibaba	1,095	72	10.6%	23.4	52.6%	0.00	3.43
14	Walmart	1,415	268	4.6%	8.6	2.5%	5.00	3.40
15	L'Oreal	858	229	9.9%	2.7	3.6%	8.00	3.38
16	H&M	582	155	13.7%	2.7	5.1%	10.00	3.35
17	3M	597	192	14.3%	3.8	3.2%	8.00	3.34
18	Novo Nordisk	86	54	36.4%	1.1	0.8%	6.00	3.31
19	Home Depot	402	124	22.2%	5.0	7.0%	5.00	3.29
20	Coca Cola Company	1,329	196	5.8%	4.2	-10.7%	6.00	3.13
21	Samsung Electronics	748	83	13.2%	9.8	8.7%	7.00	3.05
22	BASF	597	252	6.4%	3.9	-0.6%	8.00	2.89
23	Adidas	714	172	9.2%	3.2	7.9%	5.00	2.75

24	Akzo Nobel	137	0	20.9%	4.6	-8.6%	8.00	2.61
25	BMW	733	131	3.8%	3.8	1.3%	10.00	2.57

Table 4. The Gartner Supply Chain Top 25 for 2020

Rank	Company	Peer Opinion (151 voters) (25%)	Gartner Opinion (44 voters) (25%)	Three-Year Weighted ROA (20%)	Inventory Turns (5%)	Three-Year Weighted Revenue Growth (10%)	ESG Component Score (10%)	Composite Score
1	Cisco Systems	470	574	300.7%	12.5	2.9%	10.00	6.25
2	Colgate-Palmolive	1113	532	68.8%	4.7	1.0%	10.00	5.37
3	Johnson & Johnson	885	454	77.6%	3.0	3.6%	8.00	4.65
4	Schneider Electric	567	453	63.0%	5.4	4.2%	10.00	4.48
5	Nestle	1084	350	40.0%	4.8	1.2%	10.00	4.44
6	PepsiCo	857	385	47.9%	8.2	2.7%	10.00	4.42
7	Alibaba	991	316	106.7%	23.9	54.0%	0.00	4.39
8	Intel	583	488	37.4%	3.5	5.8%	8.00	4.12
9	Inditex	737	351	34.7%	4.6	6.8%	10.00	4.11
10	L'Oreal	677	252	71.1%	2.8	7.4%	10.00	4.01
11	Walmart	1333	324	13.2%	8.5	2.4%	7.00	4.00
12	HP Inc.	296	389	51.1%	8.5	5.5%	10.00	3.87
13	Coca Cola Company	1195	207	75.4%	4.4	0.0%	6.00	3.74
14	Diageo	403	280	41.4%	0.9	6.2%	10.00	3.49
15	Lenovo	397	307	16.9%	11.2	7.0%	10.00	3.44
16	Nike	768	265	47.2%	4.0	6.7%	6.00	3.35
17	AbbVie	128	30	262.4%	4.1	7.6%	5.00	3.20
18	BMW	575	182	24.8%	3.9	4.2%	10.00	3.17
19	Starbucks	799	202	52.6%	13.0	7.7%	4.00	2.99
20	H&M	412	161	22.4%	2.8	7.7%	10.00	2.95
21	British American Tobacco	154	56	85.6%	0.7	18.1%	9.00	2.90
22	3M	624	207	54.1%	3.9	1.1%	6.00	2.90
23	Reckitt Benckiser	265	14	99.0%	3.8	8.2%	9.00	2.79

24	Biogen	79	27	152.2%	2.5	7.8%	7.00	2.78
25	Kimberly-Clark	534	80	34.6%	6.6	0.2%	10.00	2.76

Discussion

The findings from this study proposes that firms, regardless of their specialty continue to work towards addressing the goal of meeting customer demands while being cost effective, through the process of enhancing their supply chain. The requirements needed to accomplish the task of cost savings demands resources that oftentimes strip businesses from their comfort zones, but yet presents short-term and long-term opportunities. In the study and literature review, all references pointed to the overall goal of being cost effective as well as increase in revenue.

In light of the difficulties in adjusting, the research also shows that there is a trend over the years by organizations and their works to take advantage of their supply chain and expand their territories while competing in markets. This is why the level of emphasis on technological growth, relations, and strategies that assist with being effective and efficient continued to resurface in the study.

Additionally, there was no evidence depicted in all the references that shows that the demand for improving supply chains will decrease. One can argue that the slow progress in optimizing supply chains heavily relies on the trajectory of markets, meaning even though demand for improving supply chains does not decrease, the improvement process is driven by vision and market demands. The references in this review and study are all based on researches from 2001 to 2021. And it is clear that even though the number of businesses have increased in the twenty year span, the successful organizations continue to improve their supply chain.

Surprisingly, the way in which all the main points discussed in the study mirrored each other was definitely an attention grabber, and expanded on the importance of different departments within firms working together to improve supply chains. Nonetheless, the flow of goods and services from one end to the other goes through different departments. And with that comes responsibilities along the way. Naturally, blaming management is a norm when firms fail to meet specific thresholds. But the connectivity with impacts on product design, analytics, outsourcing, innovation, and integration points to not just the level of influence, but also the impact that others may have depending on the firm.

Another unexpected twist is the emphasis placed on short-term and long-term goals. This research showed that organizations cannot rely on just setting a goal with hopes to meet them as time goes on. As depicted earlier in the tables, the Gartner Incorporated research on top supply chains took a twist once COVID-19 started. This means there is a level of uncertainty and organizations must work to adapt in time. The recommendation on reviews along with scheduled assessments both internal and external means that equally, long-term and short-term goals are encouraged to be revisited to allow for changes to operational requirements that may hinder the overall process to reach those goals.

Conclusion and Scope of Future Studies

Overall, this study suggests that supply chains will continue to evolve, but needs to be carefully evaluated to help with cost savings and meet demands. Even though the level of difficulties is based on how a company operates, finding ways to focus on overall vision set forth by management is key. It is important for organizations to have short-term and long-term goals, as it drives the main focus of optimizing supply chains. As a recommendation, a short-term goal to improve supply chains may include but not limited to, improve customer service, reduce old

inventory, and develop a supply chain strategy. And a long-term goal can include a review of distribution networks, address cost to serve analysis, and implementation of sales and operations planning. If taken serious, any organization will be able to save costs and add value to meet operational objectives.

Furthermore, the review indicates that the performance measures used by Gartner Incorporated's process is impacted by the reactive and data-driven strategies. Not all companies are up to par with growth processes. Supply chain improvement processes require real-time data, and demands action from responsible managers throughout the process. After reviewing all the findings, organizations must also have a process in place to integrate performance measurement systems and combine all data needed to address challenges.

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