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## The Effectiveness of Technology Development Towards Walmart's Sustainability Supply Chain Management

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**Abstract:** *This study was conducted to find out about the effectivity of technology towards Walmart's sustainability supply chain management to handle difficulty in forecasting customers' demand which led to oversupply issue in August 2022. Aside from sustainability supply chain management, the research also focused on the strategic fit and competitive advantage as well as the company's supply chain performance and the drivers of it. The research used a secondary data collection method by using media analysis and literature review from existing journals. The results showed that the use of technology has positive impacts towards Walmart's sustainability supply chain management.*

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### INTRODUCTION

As time passes by, the era is changing and now, as a result of globalization, almost all individuals and entities are exposed to extremely quick technological changes. In a sudden, we have entered the 4.0 digital era. The world has been emerging with lots of new, well-developed technologies, so it is not surprising that nowadays, even big companies are taking advantage of technology developments for their business, one of which is to develop a better supply chain management and system for the whole performance of the firm.

A supply chain consists of manufacturers, distributors, suppliers, warehouses, retailers, and customers, and within each business, all the tasks involved directly or indirectly in order to satisfy clients' requests (Meindl & Chopra, 2000). This means that the supply chain is a continuous process in which a company must be able to maintain a good supply chain system in order to survive in the industry. The supply chain process must, of course, advance with the times in order to stay ahead of rivals. A strong supply chain management system also makes it possible for businesses to control their inventories more often.

Today, there is also the term called sustainable supply chain in which it is a supply chain that completely incorporates moral behavior and consideration for the environment into a competitive and fruitful system at the company. Walmart Inc., the biggest retail company in the world, is also now doing the sustainable supply chain by using the help of rapid technology developments. Walmart expects that by implementing a sustainable supply chain, not only will its inventory management system improve since it also places a strong emphasis on the environment, but also that Walmart employees will be able to have better performance and results with a better supply chain system.

On 15 August 2022, Walmart had an excess inventory or oversupply for \$1.5 billion or around 15% higher from the normal inventory level (Banker, 2022). The CFO of Walmart, John

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David Rainey, stated that Walmart is willing to ‘throw away’ their inventories if they can since the oversupply issue will certainly create bigger problems in the future. Oversupply inventories come from clothing, gadgets, household items, and sporting goods. However, it takes a very long time to deplete the remaining stock inventory and it can even take up to more than 1 year for Walmart to do so. This causes the giant retail company to discount the price of these goods.

Undoubtedly, it is hard for Walmart to forecast consumers’ demand, especially in the pandemic era. This is because the pandemic has caused individuals to reevaluate what they actually need and must buy, which has changed what people buy at Walmart. Inflation makes this problem worse and eventually changes consumers' lifestyles. In practically all Walmart warehouses, notably those in the United States, the majority of the items that were previously deemed to be necessary ended up being stored and untouched at the warehouse which creates overcrowded warehouse conditions (LaRocco, 2022).

Due to that, Walmart, which actually has been using lots of newest technologies at their stores in order to create convenience for their customers, tries to implement better application of technologies to minimize the supply chain issues at the company. On the other side, Walmart is implementing the Sustainable Supply Chain Management (SSCM) at the company, so they should be able to keep up with the issues while also trying to apply a new supply chain system to achieve their sustainability goals.

The purpose of this study:

1. To know the supply chain management system applied at Walmart.
2. To know how sustainability can be applied towards Walmart’s supply chain management system.
3. To know the effects of using the latest technologies towards Walmart’s supply chain system.
4. To know how effective it is to use technology for Walmart’s sustainable supply chain management.

## **RESULT AND DISCUSSION**

### **Company Profile**

Walmart Inc., more known as Walmart, is an American multinational retail firm founded by Sam Walton in 2 July 1962 that operates a chain of hypermarkets, discount department stores, as well as grocery stores headquartered in Bentonville, Arkansas. It has more than 10.585 stores and clubs in around 24 countries. Walmart has a number of departments or product categories and services that they offer, ranging from clothing, books, movies, music, records, video games, arts and crafts, electronics, groceries, healthcare service, photo service, financial service, and many more.

Walmart aspires to create a better world by assisting individuals in leading better lives, regenerating the earth, and creating flourishing, resilient communities. Because of this, it is not surprising that Walmart's slogan is "Save Money, Live Better" which refers to their goal of offering all of their goods and services as cheapest as they can compare to other brands in order to relieve consumers of their concern over the cost of the goods they buy and enable them to have a better live through purchasing at Walmart.

## **Supply Chain Decision Phases**

Every supply chain process at every firm must have 3 primary supply chain decision phases, that are the supply chain strategy or design, supply chain planning and supply chain operation.

### **1. Supply Chain Strategy or Design**

Supply chain strategy or design is the choices on the location and facility capabilities, the items that will be manufactured or stored, the modes of distribution, and the company's information systems, as well as the structure of the supply chain and the functions that each organization will carry out. At first, Sam Walton, the founder of Walmart, stipulated that his business should sell the cheapest products and services amongst other retail brands in which he created the slogan Everyday Low Prices which is more known by the acronym EDLP. To achieve this, Walton created a strategic planning in which he decided to build the first Walmart store at Arkansas. Arkansas is one out of 50 states in the United States which is also considered as one of the cheapest city to live in (HomeiA, 2022). Thus, it is not surprising that Sam Walton chose Arkansas and established it using a huge warehouse style store by focusing on blue collar customers within a low-rent suburban area.

Blue collar customers mean that Walmart is targeting people who work using their physical strength, such as drivers, construction laborers, machine operators, and more. It is true that the prices became cheaper due to a good location selection. However, there were no suppliers that wanted to provide materials since the location of the store is quite far from the center of the town. Due to that, Walmart decided to create their own transportation mode which now becomes the largest along with the safest fleets in the United States.

On top of that, Walmart also maintains a good relationship with all of their suppliers by creating a good supplier relationship management or SRM. SRM is a common business practice that helps organizations boost cooperation by helping them choose the best suppliers with whom to collaborate which aims to create partnerships with suppliers that are mutually advantageous for both parties (Gartner, 2022). To create a good relationship between Walmart and suppliers, Walmart holds a 3-hour webinar to train and teach suppliers on how to use scorecards, how to read the figures, and the major variables that affect results. Additionally, Walmart allows its suppliers access to information about their inventory levels so that they may be warned when supplies are running short and can send products right away to the stores. Even though Walmart has grown significantly for years, we can see that their business can sustain within years, showing that they indeed have one of the best supply chain strategy among the retail industries.

### **2. Supply Chain Planning**

A supply chain planning tool enables businesses to develop a set of regulations for immediate operations. Additionally, they have the ability to adjust the supply chain design from the previous year and predict client demand for the next years. As for Walmart, they first set their target audiences, which are low to middle-class rural households seeking inexpensive, discounted goods and services and wanting to easily shop in one place. Due to that, Walmart appoints Mexico to be the major country to supply Walmart's raw materials. In fact, Mexico and the United States both have suppliers for Walmart. Due to cheaper costs, Mexico serves as the location of choice for many suppliers as well as the majority of manufacturing processes.

Of course, Walmart has to forecast the demand of their consumers in which they use the help of AI or Artificial Intelligence in the processes. They use an application that can be accessed by Walmart's employees in which it can predict at what time usually buyers go to Walmart, what are the most purchased products, and many more (Silverstein, 2020). The application helps Walmart a lot in knowing the consumers' needs and wants better than before which also leads to a lower excess supply in their warehouses.

### **3. Supply Chain Operation**

Lastly, there is supply chain operation where operational policies are decided in hopes that the supply chain practices are well done within the corporation. Walmart is a worldwide corporation with several locations across the world, so the laws and rules already in place will fit with the local way of life (Walmart, How we operate around the world, 2020). Even if it does not specify the rules they follow, it is clear that Walmart has continued to thrive as the largest retailer in the world, and one of the reasons for this is the positive collaboration between suppliers, distributors, and consumers who abide by the guidelines.

#### **Process View of Supply Chain**

In a supply chain management, there are several process views every firm should do, that are:

##### **1. Cycle View**

The first one is cycle view. It states that a supply chain's operations may be broken down into several number of cycles, each of which is carried out at the intersections of two subsequent supply chain stages (Meindl & Chopra, 2000). The cycle view is divided into 4 other cycles, that are:

##### **a) Customer Order Cycle**

In this cycle, customers purchase their needs and wants through the retailer, which is Walmart. Walmart is a really complete retail stores since they have products like food, books, clothes, until electronic devices along with several services such as money transfer, home protection, photo services, and vehicles' auto care centers. Since it is really complete, consumers like to spend a lot of time exploring Walmart. To make customers become more comfortable while visiting Walmart, the brand creates several policies, such as returning policies, free purchase if the cashier did not give out any receipts, and more. Due to the advanced technology, Walmart now also uses AI to run these policies. One example is that in Walmart creates an application in which the firm can find out the value of goods returned by consumers (Milano, 2021). The corporation will charge less for the items if they are still marketable than it would for things in good condition. This is done to protect Walmart from losses and to enable them to deliver the finest service possible while also doing assessments to ensure that customers won't be selling any low quality goods in the future.

##### **b) Replenishment Cycle**

The replenishment cycle entails the delivery of finished items by Walmart distributors to all Walmart shops. This is done to ensure that each store's inventory is complete and that

consumers can easily fulfill their demands. This replenishment cycle is also backed by AI, which enables them to complete replenishment more swiftly so they can ascertain client demand more immediately. Due to the ability to communicate when a Walmart store needs a product so that distributors can also move swiftly, AI helps Walmart maintain a solid connection with its distributors.

#### **c) Manufacturing Cycle**

In this process, manufacturers send finished products to Walmart distributors which will be sent to Walmart retail stores before being purchased by consumers. Although this production process is often conducted in two nations, that are the United States and Mexico, but the center of production is in Mexico due to cheaper production costs there than in the United States. Nevertheless, they never sacrifice the products' quality because Walmart consistently evaluates their goods using Statistical Process Control or SPC where there are higher and lower control limits to ensure the highest possible quality of the manufactured goods.

#### **d) Procurement Cycle**

The last cycle is the procurement cycle in which Walmart suppliers deliver their raw materials to manufacturers to be processed into finished goods. In this process, Walmart chooses to use sustainable materials so that their products can be used longer by buyers. This is demonstrated by their commitment to sustainability, which promises that by 2021, they have saved the world's garbage from landfills and incineration by diverting 78% of it (Walmart, Walmart Environmental, Social and Governance, 2021). This is possible since all of their goods employ sustainable materials. However, thanks to the company's extensive usage of AI, the link between suppliers and manufacturers may be solidified.

### **2. Push / Pull View**

The second is the push / pull view. Pull strategy is reactive in which businesses produce goods in response to what customers demanded. In contrast, the push method is speculative which make businesses produce goods by predicting client demand, hence the outcomes of the forecasting are not always accurate.

Walmart first utilized a push inventory approach. However, as a result, their stores and warehouses had a significant amount of extra inventory. In order to eliminate excess supply, they made the decision to shift their approach and use a pull inventory system. The explanation of Walmart's choice of pull inventory system will be explained further in subchapter 3.8 regarding the "Drivers of Supply Chain Performance".

### **Strategic Fit of Walmart and How to Achieve Strategic Fit between Supply Chain and Competitive Strategy**

Strategic fit can be described as how companies could manage their resources correctly so it can fulfill the customers' needs (Meindl & Chopra, 2000). In times of crisis like this, when the supply chain has higher cost compared to the other times, strategic fit is critical for Walmart's success. In order to achieve a good strategic fit, Walmart should achieve high customer satisfaction. To achieve it, Walmart should apply a good supply chain strategy and competitive strategy. As for supply chain strategy, we have discussed them in the previous sub-chapters so we will be focusing on the competitive strategy for this subtopic.

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Every company certainly has their own competitive advantage or competitive strategy. According to Michael Porter (1985), competitive advantage is described as the strategic advantage one business entity has over its competing business entities in which a firm is strengthened and better positioned in the marketplace when it has a competitive strategy. Porter mentioned three types of competitive advantages, that are cost leadership strategy, differentiation strategy, and focus market strategy in which the focus market strategy is divided into cost focus and differentiation focus.

Walmart certainly has their own competitive advantage strategy. At first, Walmart applied the **cost leadership strategy**. This strategy means that Walmart competes with its rivals by giving as low prices as possible, making customers prefer to purchase at Walmart. Due to that, Sam Walton as the founder created a slogan called EDLP or Everyday Low Prices. As mentioned before, Arkansas, a state with a comparatively low rent price compared to other US states, is where Walmart established their first shop. However, because it was so difficult to reach Arkansas at the time, no manufacturers, distributors, or suppliers wanted to collaborate with them. As a result, Walmart decided to use a lot of technology throughout the time to maintain positive relationships with its manufacturers, distributors, and suppliers. This is done so that Walmart will be able to lower manufacturing costs by getting fair distribution fees, affordable raw material prices, and other benefits. Additionally, Walmart has developed its own fleet services, the largest and most reliable transportation providers in the whole United States. This are carried out so that the delivery costs from Walmart to consumers can be cheaper compared to their rivals, such as Amazon and Target. Walmart is positioned as a brand that has low cost, but high quality products along with Amazon. However, Amazon's prices are still higher compared to Walmart, making Walmart has a lot more consumers compared to Amazon. On top of that, as the biggest retailer in the world, Walmart has the biggest market share with a percentage of 12.67% with a total of \$572 billion sales all over the world as of April 2022 (Dominguez, 2022).

We are aware that Walmart now makes extensive use of technology to run their supply chain management and keep track of their inventories. Many individuals have been left wondering how Walmart is still able to operate using a cost leadership approach despite the of the heavy use of technology. Walmart is able to do that because they apply the **vertical integration**. It is true that Walmart also collaborates with third party vendors that provide the necessary raw materials for the production process. Additionally, Walmart uses outside delivery providers to send its merchandise to customers too. Walmart is still a vertically integrated business even if they still don't have their own fields and plantations for its grocery items. A company is considered to be engaging in vertical integration if they acquire many companies to help them in growing the business. Walmart also does a lot of acquisitions. As of 2022, there is a total of 26 acquisitions done by Walmart. For example, the company bought Vudu, a firm which offers services that lets customers watch movies wherever they are in 2010. Additionally, Walmart purchased a number of retail enterprises outside the US, including Woolco, a Canadian retailer, and Flipkart, an Indian company's e-commerce. All of these purchases helped Walmart to expand its supplier base in which Walmart can do outsourcing outside the United States to earn cheaper costs.

In the supply chain theory itself, there are several steps to achieve strategic fit, that are:

**a) Step 1: Understanding the customer and supply chain uncertainty**

As a retail company, Walmart has many competitors such as Amazon, Target, CostCo, and Carrefour. This makes customers even more demanding because they want to get more benefits when shopping at Walmart. Additionally, because consumers' lifestyles, purchasing habits, and money will change over time, there will be a higher level of demand uncertainty. In order to prevent customers from switching to other brands, Walmart has to employ a clever strategy. In order to adapt the perfect strategy, the brand should do an analysis towards the market condition first and one of the analysis that can be used is the PESTLE (Political, Economic, Sociocultural, Technological, Legal, and Environmental) analysis.

**i. Political**

Political instability can occasionally arise during implementation as a result of cultural and policy disagreements. One instance is a long-ago incident in which a Walmart in Chongqing, China, offered goods that were illegal there. When this happened, Walmart suffered significant losses. Walmart must thus adhere to the laws and rules that are in place in each nation if they want their business to sustain over the long term.

**ii. Economic**

In pricing its products, Walmart cannot only look at the total costs they incur because there are other aspects they have to look at, one of them being the economic aspects such as inflation, tax rates, and exchange rates that vary in each country. Therefore, it is not surprising that there are products at Walmart America that are cheaper than Walmart China, or vice versa.

**iii. Sociocultural**

Before Walmart decides to open a new branch in another country, they must find out whether the citizens of that country match the target market and the price of the product being offered. For example, Indian citizens like DIY or Do It Yourself products, while Chinese citizens don't like them. Therefore, Walmart cannot market their DIY products in China because that would only result in losses for them.

On top of that, Walmart should also know the characteristics and income level of the citizens living in respective country. An example is Indonesia. In 1995, Walmart opened their retail store in Indonesia. However, due to the difference in wage rates between our country and the United States, coupled with the existence of taxes and a fairly high exchange rate, the prices for Walmart products in Indonesia are not as cheap as product prices in the United States which eventually resulted in Walmart closing their stores in Indonesia because they were not making any profits.

**iv. Technological**

As has been explained in several subchapters in this paper, Walmart adapts various automation technologies and AI that help them in supply chain management. In fact, in several Walmart stores, there are robot employees, showing that Walmart is really serious in implementing technology for their business to achieve high level of efficiency and

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effectiveness.

#### **v. Legal**

In doing its business, Walmart surely has to follow the legal or law in each nation. This is done not only to protect their business, but also to protect their workers. There are several legal bases that should be followed by the business, such as laws governing employment, labor, health and safety, privacy protection, and many more. Customers will of course prefer to purchase from businesses that follow the applicable legal regulations because it also shows that the firm supports the welfare of their employees and not only think about the profits that can be obtained from the business.

#### **vi. Environmental**

As we already knew, Walmart is implementing the sustainable supply chain management for its practices. Walmart launches the Project Gigaton which aims to cut greenhouse gas emissions by one gigaton. Aside from that, they have also started to market a variety of eco-friendly and recyclable goods that are designed with the intention of aiding in the preservation of the environment.

#### **b) Step 2: Understanding supply chain capabilities**

The degree of supply chain responsiveness must be high in order to fulfill consumer demand, which requires Walmart to be able to handle a wide range of client demands while also managing a huge diversity of items and implementing innovations simultaneously. To overcome this, Walmart applies the use of the latest technology which enables them to better manage their supply chain system, which will be explained in the next few subchapters. This of course requires a lot of money, but this has proven to help Walmart to have a better level of responsiveness than before.

#### **c) Step 3: Achieving strategic fit**

The strategic fit of Walmart is divided into 3, that are:

##### **1. Suppliers**

To achieve highly efficient results, good cooperation with suppliers is needed. Walmart suppliers are spread all over the world, both from the United States, Mexico, China and other countries. In China alone, they have a total of more than 10,000 suppliers. They are trying to find suppliers with cheap raw materials selling prices so they can earn higher profits.

##### **2. Manufacturers**

In order to achieve good efficiency and responsiveness, manufacturers as parties who carry out production batches must think about production costs so that pricing does not occur that are too expensive or too cheap when the goods are later marketed. Therefore, Walmart adapts the use of technology in which manufacturers are able to calculate production costs that must be incurred to avoid losses.



### **3. Retailers**

Walmart retail stores must have a high level of responsiveness by carrying out correct item stocking and fast delivery from the warehouses to retail stores to reduce lead time for customers.

#### **b. How to Expand Strategic Fit Scope**

In order to expand the scope of strategic fit of Walmart, there are several scopes that should be taken into account.

##### **a) Intraoperation Scope**

This scope focuses on how a firm should minimize its local cost view. At this process, suppliers, manufacturers, distributors, and retailers each create their own strategies independently. For example, the manufacturers of Walmart agreed upon doing outsourcing and production batching for their manufacturing processes, while the distribution party agreed on building lots of distribution centers around United States. However, since they all are still each party's own strategies, there needs to be further discussions so that the applicable strategies do not overlap and can benefit all parties.

##### **b) Intrafunctional View**

After each party is done creating their own strategies, now they to agree on several agreements with all parties involved in the supply chain processes to minimize the functional costs. For instance, Walmart agreed to build warehouses that are located near its retail locations. Furthermore, there is not a great deal of distance between the warehouses, allowing the distribution party to ship a product straight to other warehouse if they need it quickly without having to worry about paying expensive transportation expenses.

##### **c) Interfunctional Scope**

To maximize their profits, Walmart has to focus on its competitive advantage, which is the cost leadership strategy. Because all of these supply chain processes are connected to one another, Walmart must be able to set low costs so that their business is able to achieve higher revenues.

##### **d) Intercompany Scope**

To lower overall costs and increase the supply chain surplus, both suppliers and customers can collaborate by exchanging information they have in which case Walmart can pay suppliers in advance and the suppliers offer a more effective path for supplying materials. On top of that, when there is a problem involving the customer such as a long delivery time so that the product does not reach the consumer's hand on time, the buyer can immediately report it to Walmart's customer service so that similar incidents will not be repeated in the future.

##### **e) Agile Intercompany Scope**

Currently, the supply chain system continues to evolve and change all the time. This can

result in raw materials becoming scarce and difficult to obtain. Therefore, Walmart must have several suppliers who actually only supply to Walmart that are able to supply these rare materials so that Walmart is still able to carry out the production process.

### **c. Supply Chain Concept**

As for supply chain concepts, each firm should have their own concepts regarding:

#### **a) Systems Concept**

Systems concept is a supply chain idea that connects several departments and organizations under a single organization in order to foster positive relationships. It is divided under 3 aspects:

##### **i. Intracompany**

The intracompany coordination means that all departments in a supply chain system of a company should work together in order to achieve the goals in which some of them including the warehouse, manufacturing factory, distribution party, and suppliers. Without a good coordination between them all, the supply chain system of Walmart will surely become bad. For example, the integrated communication system will rapidly alert suppliers to send supplies to the production facilities when a product runs out at a Walmart store. The raw materials are then transformed into finished goods at the factory which then will be delivered to the Walmart warehouse. The distribution party will then ship the items from warehouse to each Walmart retail location. Walmart is able to promptly address customer demands with effective coordination, preventing customers from making purchases at rivals' retail outlets.

##### **ii. Inter-functional**

Inter-functional coordination is the integration and cooperation of several functional areas/departments within a single organization, as well as the exchange of information and resources. All parties involved in Walmart's supply chain management and systems are in charge of sharing information, raw materials, and other resources with one another through inter-functional coordination. Through connected communication technology, as previously stated, all parties from Walmart's supply chain management are able to know if a product is out of stock so they can start the production process immediately. Not only that, they can also track where their fleet service is, which delivers products from stores to customers' hands, so that if a problem occurs, Walmart is able to solve it quickly because it has complete information.

##### **iii. Interdependence**

Interdependence means that the activities that make up a supply chain system within a company are interdependent with one another since they share a number of resources (Dubois, Hulthen, & Pedersen, 2004). In addition, this also means that the entire supply chain processes carried out by Walmart and the use of their resources are related with one another. On top of that, they are dependent on one another. For instance, manufacturers cannot complete the production process if Walmart's suppliers have not provided the necessary raw materials which shows their interdependence.

#### **b) Total Cost Concept**

The total cost concept focuses on how Walmart is able to spend the least possible cost to obtain high responsiveness for their company which must be done in an integrated manner or in other words, we can call it as the integrated cost management approach (Robinson, 2020). To obtain this, Walmart must be able to do their pricing correctly so that there is no overcosting or undercosting that can create big loss to them. Until now, Walmart uses a **cost leadership strategy** to achieve their integrated cost strategy. For discussions related to cost leadership strategy, this is further explained in subchapter 3.4 on "Strategic Fit of Walmart and How to Achieve Strategic Fit between Supply Chain and Competitive Strategy" and 3.8 on "Drivers of Supply Chain Performance".

### **c) Trade-Off Concept**

Trade-off is also known as an opportunity cost in economics in which one has to sacrifice one choice to achieve another. In supply chain management, the trade-off concept focuses on responsiveness or efficiency. The capacity of a company to supply items in line with the customer's expectations while spending the least amount of raw materials, labor, and money is referred to as efficiency. Meanwhile, a corporation's ability to meet client requirements in a timely way is referred to as responsiveness (UKEssays, 2018).

However, for Walmart, both are important aspects of the supply chain so they cannot sacrifice one aspect for the other. To overcome this, Walmart uses the help of AI technology where they can update the stock availability of their products on the website and mobile app. Not only that, this AI technology also helps Walmart to calculate the costs they have to spend so they don't experience losses.

### **d. Impellers of Supply Chain**

Impellers have the meaning of the factors on how a supply chain management works within an organization. There are 3 impellers, that are **empowered customers, development in information technology tools, and globalization**. In the era that has entered the era of digitalization 4.0, of course we are no stranger to what is called globalization. Globalization actually brings lots of positive impacts towards Walmart. Through globalization, Walmart can get lots of new information, such as information for sourcing, information about their target markets, information about their competitors, and many more. Through that, it helps them to create a better strategy for their company to increase their profit as well as creating a better supply chain management system at the company. The information technology tools allow Walmart to earn lots of new information for their firm which makes them get lots of empowered customers.

On top of that, **information technology tools also enable Walmart to create lots of new breakthroughs**, such as websites and mobile applications that makes them earn more consumers. This is because globalization has made it possible for Walmart to learn about consumer demand and their preferred buying methods. Many individuals no longer have the time to buy for their requirements at physical businesses as technology advances. Walmart carefully considered this possibility and consequently developed user-friendly websites and mobile applications that can be accessed whenever and wherever the customer is. This is another reason why Walmart consumers, particularly those in the United States, are so empowered.

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### e. Drivers of Supply Chain Performance

Walmart undoubtedly has a really good supply chain and inventory management system. Today, Walmart has become a technology firm, meaning that they apply technology starting from their production, operation, until their supply chain and inventory management which can be seen through:

#### a) Information

Through globalization, Walmart is open towards other parts of the world. Walmart is able to get the information needed about their perfect target market. Walmart's target market is people with low to middle-class rural families that prefer to shop comfortably in one shop while looking for discounts without restrictions on gender, occupations, or age. However, through the information they got from their database, Walmart knows that there are more women who shop rather than men. Besides, Walmart also gets information needed to determine their sourcing & outsourcing since the globalization and internet allows the brand to search for more alternatives to cut production and labor costs.

In addition, Walmart also uses technology to earn information for their work. Firstly, Walmart created a mobile app called Scan & Go. It is an application which allows customers to scan all of their items and pay it online so that they do not need to interact with the employees at Walmart. Using the application developed by Walmart, customers may add their purchases to the shopping cart and scan them. The buyer will then be instructed to make payments online using the same application when the pricing for each item is revealed. Customers who have communication challenges or disabilities will find this method to be especially helpful and effective. Since this application is directly linked to Walmart's product inventory, the stock will automatically drop when an item is sold. Because of this, Walmart can get information regarding their items' availability which will allow them to deal with any supply chain issues that may arise at any time very easily. However, it is limited to consumers who become members of Walmart+ subscription, which will be explained later in the 'Pricing' aspect.

#### b) Sourcing

A business must be able to employ workers with strong abilities in managing the company's inventory and supply chain if it is to run smoothly. Besides, an organization should also be able to choose the perfect location for their manufacturing or production factories. Through their website called Corporate Walmart, they stated that the majority of the goods they source for the retail operations in the United States and other significant markets like Mexico were produced, cultivated, or put together locally, mostly done in the United States. Besides, Walmart also does outsourcing in several countries, one of them being in China. As we know, China becomes the top choice by lots of firms since the country is known to have cheap labor costs as well as cheap manufacturing costs. Besides that, China is also a country with lots of resources or raw materials. In China itself, Walmart has more than 10.000 suppliers which supply Walmart's materials. That's why Walmart also decides to outsource in the respective country. The outsourcing decision in China makes it easier for Walmart to distribute goods from the manufacturing factories in China to Asian countries in which Walmart operates, such as India and Japan.

**c) Transportation**

Transportation, also known as logistics or distribution, is another factor that helps the supply chain and inventory management system in the company. Walmart also implements the usage of technology for their transportation aspect. Walmart is aware that the individuals who operate the vehicles they own and deliver their goods to retail establishments play a crucial role in their supply chain. This is so because the drivers are people, not machines. Walmart takes the decision to work with Platform Science, a pioneer in the telematics industry and transportation technologies. The Walmart Private Fleet cab, a vehicle mode for Walmart's

transportation division, is now outfitted with an intuitive, interactive tablet device that fully integrates with NTransit, a driver workflow application created by Walmart's product and technology teams. In order to provide drivers with an experience of cutting-edge technology where businesses have real-time visibility and customers can see where their products are, Walmart and Platform Science developed the system.

Drivers who use the NTransit app have better visibility into Walmart assets' whereabouts, allowing them to arrange their days and personnel more efficiently around trucking deliveries and predict when their goods will arrive. Customers can also gain from this technology as they will be able to obtain a more accurate inventory of items accessible for online purchase and will be able to see the shelves stocked in-store. Apart from the NTransit application, Walmart has around 9.000 tractors, 80.000 trailers, and 11.000 drivers to help them distribute their products.

Besides, Walmart uses the **cross-docking management system** which means that Walmart immediately transfers the products from customers after picking them up at the manufacturers. This is done to prevent inventory from piling up in warehouses and Walmart stores. On a positive side, the cross-docking management system allows customers to receive the products they buy quickly so that lead times are reduced.

**d) Inventory**

Walmart has the **vendor-managed inventory model** that allows suppliers to access data from Walmart's information system so that the suppliers know about the information of the stock level of the materials and more. Suppliers will send the needed materials once they check that the stock is low or out of stock. It also shows that Walmart adapts the **JIT or Just-in-Time inventory method** in which suppliers will deliver the needed supplies at the right

time, that is only when the company needs more supplies, such as when they are about to start another production process. This is very useful to prevent excess supply of raw materials.

Besides that, Walmart uses a lot of types of inventories in their warehouses, that are:

1. **Finished Goods Inventory** → Walmart receives finished items, keeps them there, and frequently restocks its inventory. This kind of inventory serves to support Walmart store operations, which involve moving finished items from the company's merchandise distribution facilities to the stores where they are then sold to retail customers.
2. **Transit Inventory** → Several goods are being transited here first before going to be distributed to the Walmart stores.
3. **Buffer Inventory** → The buffer inventory is used to keep a small margin of extra goods so that Walmart will still have spare products when needed. This is

done in order for Walmart to make sure that their customers will not move to their competitors because the products are out of stock.

4. **Anticipation Inventory** → To guarantee that it has the best capacity to meet consumer demand, Walmart utilizes the anticipation inventory type. This kind is comparable to the buffer inventory since the business keeps extra supplies of the items on hand to meet rising demand. The anticipatory inventory type, on the other hand, is predicated on seasonal variations and associated factual data on seasonal variations in the market.

As for Walmart, the brand uses **pull strategy** in which the basis for Walmart's production method is their customers' demand. As a result, Walmart's warehouse has fewer instances of excess inventory. Even though their warehouse had an issue with an oversupply of goods in 2022, this pull approach substantially benefited Walmart. Walmart has focused their pull strategy, especially in the pandemic era in order to address the issue of their excess inventory..

Apart from these, Walmart also uses the help of technology for their inventory system, which is the **cloud-based inventory management system**. With a cloud-based inventory management system, a business can keep track of all the data related to its stocks with the use of just an internet connection. In other words, this kind of inventory system is highly useful and efficient since it enables businesses to examine their data at anytime and anywhere. Simply put, this system is comparable to how we store our folders and files on Google Drive, which we can access wherever there is an internet connection.

Walmart uses Google Cloud for its cloud-based inventory management, utilizing it to establish messaging services and store data. Walmart's online and mobile apps are also powered by Google Cloud platform. Walmart employs computer systems to track and manage inventories through a highly automated process. This also shows that Walmart is using the centralized inventory system, meaning that the company has a central system for tracking products, such as one that offers real-time data on each item in your store. This enables them to monitor inventory levels of raw materials and finished goods as quickly as possible so that their suppliers can deliver them on time. On top of that, using cloud-based inventory management allows Walmart to cut their costs and have a data backup. On the other hand, because there is a disaster recovery capability, which will be very helpful for business continuity, the danger of data loss may be reduced. Additionally, thanks to the technology of this cloud-based management system, Walmart is also able to predict consumer demand, trace the movement of its items, determine the unit prices of each product, and lower the expenses associated with managing its supply chain, all of which help Walmart cut losses.

#### e) **Facilities**

Facilities are the infrastructures or assets owned by the firm. The firm cannot run well without good facilities. One of the assets of facilities is the warehouse. Walmart has a lot of warehouses around the world which is called as the **distribution centers**. Up until now, the business has 210 warehouses with the largest one being the Casa Grande Walmart Distribution Center which has an area of 1.5 million square. Each distribution center supplies 90 to 100 stores within a 150+ mile radius and is more than 1 million square feet in size, employs more than 600 people, and unloads and ships more than 200 trailers a day. Additionally, Walmart has 6 disaster distribution centers spread throughout the nation that are ready to offer an immediate response to help citizens if a natural disaster happened.

Walmart stated that since 2017, they have cooperated with Symbotic, an automation technology company, to modernize their supply chain and improve their processes, giving their

employees the chance to learn new skills, adapt to new technologies, and get ready for the workforce of the future. On top of that, Walmart has also constructed a cutting-edge consolidation facility in Colton, California, which allows three times more volume to flow through the facility.

#### **f) Pricing**

Walmart's competitive advantage is the **cost leadership strategy**, meaning that they focused strongly towards low prices of their products rather than creating uniqueness or differentiation of the goods they sell. This is actually not surprising since their slogan is 'Save Money, Life Better' as well as Everyday Low Price (EDLP) that has the meaning that Walmart is trying to sell products with the lowest prices one can't find in other shops with the thought that they can help shoppers to live a better life. Walmart puts low prices for their products also because the selected audience comes from low to middle class rural families which of course have low to middle level of income.

Since Walmart now is also using website and ships their products worldwide, they also create a subscription box called the **Walmart+** that is a paid subscription to purchase Walmart's products online while also getting lots of benefits because users are becoming Walmart's members. Walmart is using the **flat-rate pricing system** for the Walmart+ subscription in which the subscription price will always stay the same for all users. Walmart charges an annual subscription fee of US\$98 or US\$13 for the monthly price. They also have a 15-day trial for those who are interested in the subscription box. Although this pricing seems high, it is reasonable given what the buyers receive. Walmart+ members will get free unlimited deliveries with a minimum purchase of US\$35 while also getting access for their application Scan & Go. Besides, users can also access the Walmart Black Friday Deals faster than others who do not use this subscription. Meanwhile, Amazon Prime, an Amazon subscription system that charges US\$139 fee annually, is becoming the competitor for Walmart. Amazon Prime actually has similar services offered to their customers, but they have more unique offerings such as users can stream music and movies by subscribing through them. However, this does not make Amazon Prime become better than Walmart+ because now people prefer to stream music and movies on Spotify and Netflix. Therefore, these offerings from Walmart are very attractive because they offer low prices with quite complete offers.

#### **f. Role of Distribution in Supply Chain, Factors Influencing Distribution Network Design, and Distribution Design Option for Walmart**

Distribution in a supply chain refers to the actions necessary to transport and store a good from the supplier stage to the customer stage (Meindl & Chopra, 2000). Walmart wants to achieve a good distribution network since **it helps their supply chain management to accomplish the goals of having low cost but high responsiveness which enables them to achieve higher profits**. The fact that Walmart has 158 distribution centers spread out in the United States with the biggest one being Casa Grande Walmart distribution center that has 1.5 million square feet and located in Arizona is, therefore, not shocking. To achieve their goals, there are several factors that Walmart has to face in conducting distribution network designs, 2 of which are:

##### **a) Customer needs that are met**

In general, the majority of consumers go to Walmart since they want to purchase grocery needs like vegetables, bread, and fruits. Meanwhile, we are aware that these food necessities are not long-lasting goods. As a result, quick product delivery is also necessary for Walmart so that customers may obtain fresh goods and the company can achieve high levels of customer satisfaction. Customer loyalty will undoubtedly remain high if the customer satisfaction is strong.

#### **b) Cost of meeting customer needs**

On the other hand, Walmart undoubtedly needs to pay expenses to meet the demands of its consumers, one of them being the distribution costs. Since Walmart has lots of stores located all over the world, distribution fees are unavoidably become a problem for the company due to the high expenses involved. To overcome this, Walmart performs online sales to get around this so that the distribution charge may be decreased and the client does not have to pay a lot of money.

After realizing the factors that exist, Walmart can determine the design of the distribution network. Walmart follows the **intensive distribution channel design**. Also known as the intensive distribution strategy, it is the approach which entails providing customers with access to the brand's products in as many locations as possible. In other words, this distribution channel is designed in order for all Walmart stores to have the same products being sold, both at the physical stores and at online stores. Because it can encourage more customers to make purchases from Walmart, this distribution channel also serves as a marketing tactic for the company. Additionally, Walmart does not have to worry about product shortages due to its extensive network of distribution hubs. If a product runs out, restocking may be completed swiftly.

Walmart also uses technology in distribution, as described in section 3.8 on "Drivers of Supply Chain Performance." It is hardly unexpected that Walmart chose to purchase Symbotic's 62.2% ownership given that Walmart employs Symbotic AI technology and Symbotic itself develops warehouse automation technologies (Salgado, 2022). Since July 2022, Walmart has been using this Symbotic technology, which has improved inventory accuracy and increased the capacity of its warehouses to receive and transfer all of its merchandise to retail locations. An increase in inventory accuracy can improve the company's performance and supply chain management as a whole which of course will make the distribution process of Walmart become more accurate.

#### **g. Online Sales Impact on Walmart**

These days, lots of businesses have their own website and mobile application to ease consumers in fulfilling their needs and wants, and Walmart is no exception. In the year 2000, Walmart released an online website using the link [www.walmart.com](http://www.walmart.com). 11 years later, exactly in 2011, the brand decided to release a mobile application for their customers which can be downloaded through Google Play Store or App Store on every customer's cellphones.

This online sales boosted Walmart's sales income significantly, especially throughout the pandemic. This was due to the fact that although individuals still had needs to be met, the majority of them were scared to leave their houses because of the COVID-19 outbreak which at the time was still widespread and terrifying for everyone. Therefore, spending through online



channels, e-commerce, and mobile apps significantly boosts Walmart's income. Walmart stated in their 2020 annual report that they achieved a total of US\$524 billion for their annual revenue (Walmart, Walmart 2020 Annual Report, 2021). This can also be reached due to Walmart launching 2 new services, that are InHome Delivery which is a service where employees from Walmart will deliver customer orders to the desired destination and NextDay Delivery for customers who purchased through Walmart website where they can get their order delivered a day after placing their purchase, which is really beneficial both for consumers and Walmart itself.

Aside from their revenue, Walmart also experienced several benefits through online sales which can be divided into 2:

**a) Impact on Customer Service**

Online sales certainly have a number of positive impacts on Walmart's customer service. Some of them are:

**i. Response time to customers**

When a buyer visits a physical store to purchase goods for their needs and wants, they must spend some time looking for the product they want. The employee who works there will also need some time to find the item that the customer wanted to buy if the customer asked them about it. Additionally, customers must line up before paying at the cash register. Meanwhile, when using the Walmart website and mobile app, customers only need to type in the product they are looking for at the search bar, click the 'Add to Cart' button, then proceed to pay right away using electronic money. Because of this, customers will not have to spend too much time shopping for their necessities.

**ii. Product variety & availability**

The use of online sales also makes it easier for customers and Walmart to find out the existing product variety and availability of these products. This makes it simpler for customers to make purchases so that they can quickly discover a replacement for the item they want if it sells out. Meanwhile, for Walmart, the networked and connected communication technology allows the brand to quickly alert suppliers and manufacturers when a product is running low so that it can be restocked immediately.

**iii. Customer experience**

With the use of websites and mobile applications, Walmart's customers feel comfortable since they can shop whenever and wherever they want without having to go to the physical stores. Through this, customers will have a positive buying experience at Walmart thanks to the great efficacy and efficiency of the usage of online sales.

**iv. Order visibility**

Through online sales, customers are able to track the products they have purchased. For example, they can see their order number, the day and time their product will be delivered, until the estimation date of when their package will arrive at the specified destination place. This

makes it incredibly simple for them since they can contact Walmart right away by giving their order number if something bad occurs, such as their package is getting lost in the middle of the delivery.

#### **v. Returnability**

On top of that, online sales make it easier for buyers to return their package if the product delivered by Walmart is wrong or has defects on it. Walmart offers a return policy for its own online purchases that allows customers to use their order number to return items up to 90 days after they are delivered. Previously, buyer should contact the company first by sending an email. Even so, this makes it very easy for consumers because they can still make returns and acquire replacement product without having to visit Walmart physical shop.

##### **b) Impact on Cost**

Besides that, online sales also have several good impacts on the cost Walmart spent.

#### **1. Facilities**

Walmart is able to lower the expenses they spend for its buildings thanks to internet sales. One example is the warehouse. Walmart employs fewer warehouse facilities due to the website and mobile application than it would if it only utilized physical shops which lowers the cost of handling goods from the warehouse.

#### **2. Inventory**

Because the handling fee from the warehouse is lower, this also means that the amount of inventory Walmart needs to maintain is far less than the amount of inventory in physical shops. As a result, Walmart's emphasis on stock inventory management becomes more focused or centralized.

#### **3. Information**

Additionally, Walmart can instantly determine the quantity of items sold through online sales, allowing Walmart to estimate demand precisely and swiftly. Walmart is able to eliminate excess inventory in their warehouse thanks to this as well, making the brand's supply chain and inventory management is able to work better and more efficiently.

#### **4. Transportation**

Online sales also allow Walmart to minimize their costs on distribution or transportation. Because items must be delivered from distributors to each Walmart retail shop scattered across several locations in the United States, physical stores require more sophisticated transportation which adds to the time and expense. Online sales, however, have cheaper distribution costs since wholesalers just have to bring their products to one of Walmart's warehouses before they are delivered to customers who place orders there. Walmart can also distribute information more quickly and affordably through the internet.

#### **h. Walmart Supply Chain Performance**

A supply chain performance of each company is different. It can be measured through different approaches, such as through customer satisfaction, inventory levels, return on assets, efficiency, and many more (Carvalho, Cruz-Machado, & Asevedo, 2010). The use of technology in supply chain practices has become something that is commonly done by businesses. Although of course there are costs that must be spent even more to carry out routine maintenance on these technologies, technology really helps businesses. The existence of an integrated management information system in each firm's technology network means that they no longer need to worry about data loss because information is interconnected between departments. Not only that, they also have data backup. They can also see records of their supply chain practices so they are able to find errors and issues that arise so that they can be resolved immediately.

As for Walmart, the supply chain performance is measured through its **inventory levels**. As mentioned in the beginning of this paper, the availability of excess inventory, which leads its warehouses and shops to retain a huge number of items beyond what is appropriate becomes the biggest issue for Walmart in 2022. Thus, Walmart adopts technology to control their inventory levels as a result. In addition to using applications to monitor their suppliers, manufacturers, and distributors about the supply chain, the supply of raw materials, and product shipping, Walmart has recently adapted the use of inventory management robots in their stores.

The device, created by the digital start-up Bossa Nova, roams the aisles of a store and scans the shelves to find items that are mispriced, mislabeled, or out of stock, possibly enhancing business operations and cutting down on worker hours required for inventory monitoring. This technology has advanced tremendously since it was first introduced in 2017 and it is still being used by Walmart up until now.

Technology also made it much easier for Walmart to rearrange their inventory levels. To avoid an overabundance at Walmart, they also adopt the **JIT** or **Just-in-Time strategy** which entails asking their suppliers to transmit their supply of raw materials only when they really need them. By using JIT, Walmart is able to **reduce unused supply waste** due to oversupply. With this, they are also able to **reduce their costs** on supply so they incur less costs. This lower cost can be allocated to other aspects of the supply chain, such as by developing applications for drivers, websites and mobile apps for customers so as to reduce the lead time that Walmart buyers have to experience. Aside from that, the costs can also be used to maintain the technology used at the company to increase the quality of supply chain management as well as the products and services offered at Walmart. This way, Walmart is able to **achieve high levels of effectiveness and efficiency** because they are able to improve the customer experience which will lead to high levels of customer satisfaction and high customer loyalty.

#### **i. Walmart Sustainability Supply Chain Management (Walmart SSCM)**

Nowadays, there is a term called Sustainable Supply Chain Management (SSCM). SSCM entails integrating economically and environmentally sound practices throughout the entire supply chain lifecycle, from product development to material selection, from hiring ethical staff to selecting ethical suppliers and distributors (Popescu, 2022). The practice of SSCM encourages firms to produce less waste while also trying to keep the long-term

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maintainability and sustainability of the business. SSCM is certainly not easy to implement because companies must ensure that sustainability practices will not only have positive impact on firms, but must also have a good impact on the surrounding environment. In other words, SSCM practices are also the same with Green Supply Chain Management in which environmental considerations may be given to developments in industrial buying and supply chain management.

Since consumers prefer to buy from companies that benefit the environment, businesses also do this today. Walmart is one of several companies that apply SSCM. Walmart works with suppliers, non-governmental organizations (NGOs), and consumers to change the company and the global supply chains to be more regenerative. In order to create a long-lasting sustainability practices at firm, Walmart is making some progress in their SSCM which is carried out in several sectors:

#### **a) Agriculture**

Walmart stated that starting September 2020, they started a new commitment in order to become a more regenerative business where they work to protect the environment while also trying to repair, regenerate, and refill. Because of that, Walmart released the Row Crop Position Statement. For suppliers of row crops like wheat, onions, rice, and so forth, Walmart outlines farming best practices, including soil and nutrient management, integrated pest control, water management, and land management. The strategy relies on where the farmers live or in other words, it depends on the farmers' geographic area. It also seeks to promote creative approaches for enhancing agriculture while also seeking to safeguard resources. Besides row crop position statement, Walmart is also working on their Midwest Row Crop Collaborative (MRCC) in which the suppliers and retailers as well as nonprofit organizations try to create new, unique solutions to agricultural problems. The MRCC practices enable Walmart to lower the level of gas emissions, increase water and soil quality, and improve farm's profitability.

Since the technology is emerging, Walmart is also thinking of a way to create a better sustainable agriculture processes for their business. On January 2022, Walmart signed an exclusive investment contract to partner with Plenty Unlimited Inc., an indoor vertical farming business that is subject to regulatory permission. Plenty is seen as a breakthrough by companies, especially retailers, since they try to reduce several issues related to quality of food through technologies that are pesticide-free while still having great flavors. Walmart saw an opportunity by partnering with Plenty since they are able to lower their costs, reduce food waste, and increase the quality of their food products so that consumers will not be disappointed with their goods.

In comparison to traditional agriculture, Plenty uses a small fraction of the water and land area to grow multiple crops on each platform which is done by using proprietary technology and software. According to the business, it uses just 1% as much land as conventional agriculture while producing crops that are 150–350 times more productive per acre. This is very helpful for Walmart because the results of farming are faster than traditional agricultural practices, so the possibility of stock outs is smaller.

#### **b) Climate**

Apart from agriculture, climate is also one of the aspect in which Walmart is paying attention to in the sustainability practices. As we already knew, the climate is changing towards a worse side nowadays. Deforestation, the use of scarce energy such as excess fossil fuels, and farming livestock adds to the level of carbon gas emissions worldwide. Not only carbon gas emissions, but there are also several effects because of that, such as an increase on the level of drought, heavy storms, and hotter temperatures. Walmart pays attention to climate change because no business, including their own, can thrive without the support of the environment.

Walmart wants to inspire collective climate action in the retail and consumer goods industries through its ambitious goals and mitigation initiatives, advocacy, supplier engagement, innovation, and philanthropy in product supply chain practices. Walmart has made a commitment to Project Gigaton to decrease gas and supply chain emissions by 1 billion metric tons, which is the same as a gigaton, by 2030. It is a self-made project by Walmart that has been announced since April 2017 in which it aims to motivate suppliers to lower greenhouse gas emissions from the entire global value chain, both upstream and downstream.

### **c) Resources**

Resources is a very important aspect of Walmart. Without quality natural resources, the products and services they produce will not be of good quality. However, these days, natural resources are becoming increasingly difficult to find because many of them have become scarce as a result of global warming. Therefore, Walmart encourages their manufacturers to use environmentally friendly resources in making products. Not only in terms of product, but packaging must also use recyclable materials so that buyers are able to reduce, reuse and recycle more easily.

On the other side, Walmart also embraces all parties of their supply chain to use solar panels. This is one of the proofs that Walmart is fully focused on sustainable supply chain practices where the use of solar panels allows their business to reduce the use of excess electricity which can have a negative impact on nature. Walmart also engages their suppliers to continually improve their practices by promoting the ocean, field, and forest health.

### **d) People**

Walmart is known to have sustainable supply chain management practices at their company. The corporation strives to maintain and enhance a solid supply chain management system inside the organization that empowers employees and their performance while also attempting to utilize items that will generate an economic opportunity for the people and environment. Walmart makes sure that all the materials they source come from suppliers that act ethically in the society, provide a good working environment within the workplace, and pay the workers fairly (Walmart, People in Supply Chains, 2022).

In order to choose trustable parties and employees, Walmart is doing a **responsible sourcing**. Additionally, the brand is generating employment opportunities for those involved in supply chains. In addition to boosting local economies, the production and delivery of goods creates employment opportunities for billions of people involved in product supply chains, helping to lift many of them out of poverty. These supply chains procure billions of dollars' worth of goods each year from a variety of suppliers and use both commercial and charitable

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resources to aid smaller producers in expanding their markets.

## CONCLUSION

In conclusion, **we can see that the use of technology has such a big impact on Walmart.** Their company is able to make a more precise forecasted demand to minimize the occurrence of excess supply issues in their warehouses and physical stores. In addition, the use of technology helps Walmart in responding to customer demands and carrying out the production process because one party is connected to another by a communication network through the internet. Not only that, technology has also proven to be very helpful for Walmart in carrying out their sustainable supply chain management in which not all companies are able to do. **Walmart maximizes the use of technology to help their supply chain and inventory management system so that they are able to obtain high responsiveness, high efficiency, and high levels of effectiveness.**

Despite of the good performance performed by Walmart, I do have several suggestions. Firstly, the use of the latest technology will certainly cause Walmart to reduce human workers over time, even though one of their ways to achieve sustainability is to employ human employees and humanize them. Therefore, I suggest that even if the use of technology is getting higher, human labor is still high in some areas where **technology should be assisted with human power**, one example is placing human employees in distribution centers even though these centers have used a lot of technological adaptations. This is done so that Walmart can perform double checks, namely checking by human employees and by technology.

Another suggestion I would like to give is that **Walmart should employ ethics officer**, an employee who specializes in evaluating ethics actions, to check whether the supply chain management parties involved have done their jobs ethically. The majority of people likely believe that this is unimportant. However, an ethics officer is required to verify that suppliers, distributors, manufacturers, and retailers themselves have carried out their work in accordance with the job descriptions ethically because supply chain practices are those that significantly influence the sustainability of a firm as a whole. Walmart can develop a sustainable business with the support of the ethics officer since without honesty from all sides, the firm will not be able to compete for a very long time.

At the end of the day, I truly realize that the usage of technology really helps Walmart in achieving a better effectiveness level for the whole firm. As the biggest multinational retail company in the world, I can see that Walmart is really implementing great technology in order to improve their supply chain and inventory management, which benefits the whole parties of the corporation. At the same time, they are also striving their best to achieve a sustainable supply chain management through their practices, breakthroughs, campaigns, and projects to achieve sustainability for the whole organization. I believe that if Walmart continues to improve, their company will be able to become the most advanced corporation in the world, especially as a firm with a good sustainable supply chain system.

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