

ALMA MATER

STUDIES ON INFORMATION AND KNOWLEDGE PROCESSES IN SUPPLY CHAIN MANAGEMENT



Információs Társadalomért Alapítvány

ALMA MATER

STUDIES ON INFORMATION AND
KNOWLEDGE PROCESSES IN SUPPLY CHAIN
MANAGEMENT



Információs Társadalomért Alapítvány

ALMA- MATER könyvsorozat / ALMA-MATER Book Series

<https://infota.org/kiadvanyok/alma-mater/>

Sorozatszerkesztő / Series editor:

Dr. habil. Kiss Ferenc, a Szerkesztőbizottság vezetője / Head of Editorial Board

Szerkesztő / Editor: Dr. habil. Kiss Ferenc

Technikai szerkesztő / Technical editor: Dr. habil. Kiss Ferenc

Lektorok / Review Committee:

Dr. habil. Kiss Ferenc, a lektori bizottság vezetője / Head of the Review Committee

Dr. Lakatos Péter

© Alfonz Antoni, Krisztina Barta, Mao Jiamin, Huy Bach Nguyen, Yang Shuhan, Savannah Celestina Trail, Zhang Yuyi, 2022

DOI: <https://doi.org/10.60030/ALMAMS.k202202F4SU6v>

ISSN 1587-2386

ISBN 978-615-82082-4-6 (pdf)

Első kiadás / First edition

Budapest, 2022. december / December, 2022



Creative Commons: Attribution-NonCommercial-NoDerivatives 4.0 International

Kiadó / Publisher:

Információs Társadalomért Alapítvány / Foundation for Information Society

1507 Budapest, Pf. 213.

Web: <http://www.infota.org>

E-mail: info@infota.org

Tel.: +36-1-279-1510

Felelős kiadó / Responsible for the Publication:

az Alapítvány Kuratóriumának elnöke / Chairman of the Curatorium

TARTALOMJEGYZÉK

Global Supply Chain Management Issues in the Focus of Development of E-Commerce <i>Alfonz Antoni, Huy Bach Nguyen</i>	1
Comparative Analysis of Global Supply Chain Management of Chinese and USA HI-TECH Electronic companies and Its Implications <i>Alfonz Antoni, Zhang Yuyi</i>	37
Studying the Changes Forced by Covid-19 on Small and Medium Businesses and its supply chains in the UK <i>Alfonz Antoni, Savannah Celestina Trail</i>	59
Analyses of foreign experience of digitalization of supply chain management at SME in China <i>Alfonz Antoni, Yang Shuhan</i>	99
The evaluation of the efficacy of supply chain management of retailers in the context of globalization <i>Alfonz Antoni, Mao Jiamin</i>	133
The impact of COVID-19 pandemic in freight forwarding and international relocations industries <i>Krisztina Barta</i>	167

Global Supply Chain Management Issues in the Focus of Development of E-commerce

Alfonz Antoni

associate professor
Metropolitan University

Huy Bach Nguyen

Consultant at Viet Thuan Group

Abstract

Supply chain management is vital to a company's success as well as customer's satisfaction. In this paper, supply chain management was studied with Amazon as an example of globally great success. The study observes how Amazon has renovated its supply, and at the same time the study points out components and aspects where Amazon can improve. The paper includes three main parts. First being the principles of supply chain management, in which we discover the types of supply chain, the current trends and the ideas behind these strategies as well as which supply chain strategy should be executed by a business. The second part covers the key factors to successfully manage a supply chain, businesses should focus in certain tasks to improve their supply chain. The last part is about Amazon, how Amazon is innovative, how well Amazon manages its supply chain and ultimately how Amazon is becoming the leader in e-commerce industry.

Keywords: *supply chain management, logistics, management, Amazon*

1. Introduction

Historically, the practice of supply chain management has always been an integrated part of the economic and business development. Fundamentally, the supply chain can be understood as a network of distribution options and facilities that enable the smooth transition between the procurement of raw materials, their conversion into intermediate and finished products and their distribution to the customers. A business that deals with products always require a form of supply chain system. While the supply chain management has, in principle, remain unchanged with its 3-step approach, as the society progresses and the economy grows, businesses need to be able to stay competitive and satisfy the growing demands of their customers. Reducing cost, better quality control and faster delivery are only some of the

conditions that businesses need to keep to strive toward, to stay competitive and to satisfy the customers. In the pursuit of improving the business model, the supply chain system has also evolved in order to satisfy these rigorous requirements. Supply chain management has become a veritable and precise science that has continuously grown in sophistication, in order to keep up with the modern world's complex business models. With the rise of globalization, the possibility of the supply chain grows ever larger with the accessibility to resources from around the world, but the risks and difficulties of its management also expand tremendously as well. The supply chain needs to be adapted to each business, based on different factors such as the business model, the type of industry, the scale of the business, the geographical location, the competition on the market, etc. Implementing the right supply chain is vital to achieve a high business performance and remain competitive. In order to understand the working principles behind a successful supply chain, this paper will explore the different theories and techniques of supply chain management. In addition, a case study of Amazon, one of the most rapid growth companies in the world, in great part due to its innovative supply chain system, will also be included, with detail analysis of its business model and its supply chain network.

2. Principles of Supply Chain Management

Definition of supply chain

The supply chain management is the management of all the links (purchasing, supply, transport, handling, etc.) along the logistics supply chain.¹ The goal of supply chain management is to optimize the steps and methods of supply in order to reduce delivery times, stocks and thus costs to a minimum. Once this optimization is successful, we speak of a workflow organization when there is no stock, no inventory, meaning the products will be delivered to the end consumers in the shortest time, therefore those products won't be sitting in storage, warehouse. To achieve this goal, supply chain management operates different levers in the company. In some cases, it automates orders, based on data received from the company's information system. Thanks to this integrated system, it is possible to track detailed information of all the products and thus go back to the supplier of each material required to assemble the finished product offered for sale to the customer. Product logistics (upstream logistics) encompasses all activities related to production and supply. Support logistics (downstream logistics) includes all distribution activities, product savvy and maintenance. Some characteristics of a competitive supply chain are optimization of inventory – by accurately forecasting the demand of items and products, customization – by

¹ Chopra and Meindl (Chopra, Sunil, and Peter Meindl, SUPPLY CHAIN MANAGEMENT – FIFTH EDITION. PEARSON 2013 Knowledge Boulevard, Sector 62, Noida 201 309, Uttar Pradesh, India., Chapter 1)

manufacturing, delivering and stocking customized parts for customers' needs, flexibility – by changing the supply chain processes according to technological, political, social changes.

Global supply chains have become a common way of organizing investment, production and trade in the international economy. In many countries, particularly in developing countries, they have created jobs in support of economic and social development. Global supply chains are complex, diverse, fragmented, dynamic and everchanging organizational structures.

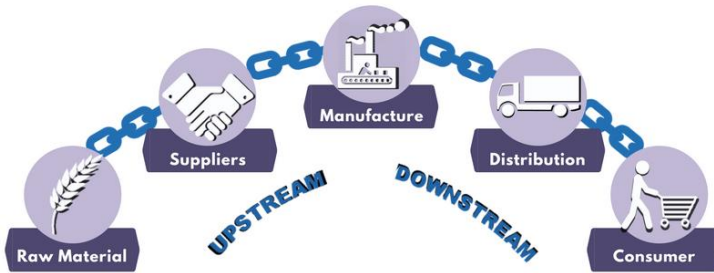


Figure 1: Basic Supply Chain²

Types of supply chain

Efficiency-focused – this is one of the very first supply chain strategies that focuses on efficiency. In many ways, this strategy has existed for over a century. Efficient supply chain strategy with an intense focus on driving down the costs across all supply chain processes and functional areas. Its goal is to supply products with predictable demand at the lowest possible cost.³ Unlike other strategic trends, efficient supply chain is an old but good strategy that still exists today in many organizations. Under the right conditions, this strategy is very viable and clearly supports the generic corporate strategy of cost leadership.⁴

The goal of being more efficient has always existed in operating environments but Henry Ford really brought the concept into the mainstream with his discipline and scientific approach to mass production. Ford had the goal of making cars affordable for the average working family. He accomplished this goal by producing large quantities of vehicles that leveraged economies of scale and drove down unit costs throughout his factories and extended supply chains. To further explore this strategy, we can look at a basic rudimentary

² Basic Supply Chain, <https://mfgtec.org/supply-chain-explained/> [Accessed: 15 February]

³ Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", California Management Review 44(3):p113 April 2002

⁴ Mohsen Attaran, Sharmin Attaran, (2007) "Collaborative supply chain management: The most promising practice for building efficient and sustainable supply chains", Business Process Management Journal, Vol. 13 Issue: 3, p.390-404

supply chain model. It starts with raw materials from a supplier (supplier sourcing), that are transported (inbound transportation) to an inbound distribution center (inbound distribution) and that distribution center feeds a manufacturing facility as their production schedule dictates (manufacturing). Once finished goods are produced, they move through an outbound distribution center (outbound distribution) and are transported (outbound transportation) to a wholesaler or retailer for ultimate sale to a consumer. With an efficient supply chain strategy, every one of these functional areas has an intense focus on driving down the cost per unit that typically means that sourcing will select low-cost suppliers and negotiate further large volume discounts for buying in bulk. Likewise, inbound and outbound transportation will focus on selecting carriers that provide the lowest cost per mile rate and then further reduce transportation costs by only sending full shipments. The inbound distribution center will drive down distribution costs by receiving these full rather than partial shipments. In the manufacturing facility, production schedules will be planned and optimized with a nice and long run of a single item that reduces the production costs per unit and minimize changeover costs.

Responsive – with this approach, organizations have an intense focus on quickly reacting to unpredictable demand. The goal of this strategy is to stay in stock on hot new innovative items while still minimizing obsolete inventory levels and associated markdowns.⁵ In other words, a responsive supply chain is able to deal with uncertain sales patterns without holding large amount of safety stock by rapidly responding to demand signals. The responsive supply chain strategy has certain conditions. It is typically used with innovative products and it complements a corporate strategy based on differentiation. The origins of a responsive supply chain can be traced back to the Toyota “just in time” production system.⁶ Just-in-time production invests heavily in reducing the amount of time it takes to perform basic tasks. This reduces overall lead times for a finished product. A responsive supply chain strategy builds on the idea of reducing lead times within a factory and expands the concept of all functional areas within a supply chain. For instance, consider a generic supply chain that I have mentioned earlier which is supplier sourcing, inbound transportation, inbound distribution, manufacturing, outbound distribution and outbound transportation, these processes have an intense focus on cost-cutting. However, for companies to gain a competitive advantage based on rapid response, the approach for each functional area changes from cost to time. With a responsive supply chain strategy, tradeoff decisions are made with an emphasis of time, rather than cost. Therefore, each functional area is constantly looking to improve processes to drive down cycle times and reduce overall finish goods lead

⁵ Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", California Management Review 44(3):p114 April 2002

⁶ Cheng TCE and Podolsky S, 1993, Just-in-Time Manufacturing - an introduction, Chapman and Hall, London. P12-44 <https://books.google.hu/books?id=WL95yypj1TIC&printsec=frontcover&hl=fr#v=onepage&q&f=false> [Accessed: 18 February]

times. For example, sourcing managers will purchase smaller quantities of products just as needed and they will seek out suppliers that provide the lowest lead times for products. Inbound transportation managers will typically use a premium transportation service and faster modes of transportation. Inbound distribution centers will receive products just as they are needed often on a just-in-time basis on short time intervals. Factories will change over lines and equipment so they can build the order with shorter production runs. Outbound distribution centers will respond immediately and pick individual orders as they arrive. Outbound transportation will expedite small shipments direct to the customer as soon as they become available rather than hold shipments for cost-saving.

Risk-hedging – in a supply chain context, risk-hedging strategy is about dealing with supply disruptions. More specifically, risk hedging is a supply chain strategy that has a goal to share and pool resources to collectively share and minimize supply disruption risks.⁷ It takes a lot of coordination, collaboration and cooperation to succeed but it is a vital approach to supply chains that frequently experience supply problems. The concept of risk hedging builds on Fisher's original work⁸ that identified two basic supply chain strategies that is efficient supply chain strategy and responsive supply chain strategy. These strategic approaches to supply chain management address varying conditions of demand, certainty or uncertainty, by identifying appropriate actions for functional or innovative product types. These strategies work well under the right conditions, but they assume that supply characteristics are stable. There are also times when supply is erratic, unpredictable or uncertain. When supply is uncertain, efficient and responsive supply chain strategies are inappropriate. Because when supply is uncertain, making assumptions based on supply stability can lead to problems. To illustrate this concept, the basic supply chain works fine if all sources of supply keep flowing throughout the supply chain, but what happens when there's some type of supply disruption, when a supplier cannot deliver to a manufacturer, the supplier has ongoing quality problems or erratic lead times that lead to delayed deliveries. Regardless to the cause of the supply chain disruption, everything stops flowing and retail shelves become empty of products that consumers want or need. In this case, a risk-hedging strategy is appropriate. With this strategy, supply chain managers can seek out multiple sources of supply to spread out the risk and minimize supply disruptions. Although one of the suppliers might have a delivery

⁷ Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", California Management Review 44(3):p113 April 2002

⁸ Gregory A. Harris, Paul J. Compton, Philip A. Farrington, Engineering Management Journal; EMJ 22(4):p31-43 - April 2015

https://www.researchgate.net/publication/276090534_An_Exploration_of_Fisher's_Framework_for_the_Alignment_of_Supply_Chain_Strategy_With_Product_Characteristics [Accessed: 20 February]

issue for a short period, it's unlikely that all suppliers would all experience a same problem at a same time. The more sources of supply that we have, the less risk we have.

Agile – an agile supply chain strategy focuses on “being responsive and flexible to changing customer needs” while simultaneously hedging against supply disruption risks.⁹ In another way, supply chain agility comes down to quickly responding to changing supply and demand conditions. The concept of supply chain agility also builds on Fisher’s work with efficient and responsive supply chain strategies.¹⁰ Those strategies deal with varying degrees of demand uncertainty. An agile supply chain strategy should be used when both supply and demand uncertainty are high. According to Professor Hau Lee, an agile strategy should be combined with the best of risk-hedging and responsive approaches because risk-hedging addresses supply uncertainty and responsiveness addresses demand uncertainty. But an agile supply chain strategy involves more than just combining risk-hedging with responsiveness, it also involves the intersection of key relationships, sensitivity, processes, information and flexibility. To explain this in more detail, starting with relationships – due to the high level of uncertainty and situations that require agile supply chain strategy, organizations need to form relationships with each other to help manage or reduce supply and demand uncertainty. These valuable relationships require firms to quickly partner with each other in order to communicate, collaborate and coordinate about chain process flows. Agility requires multiple organizations working together to solve problems. It also requires a shared belief that leveraging relationships can create synergies. Managing supply chains under uncertain conditions is difficult and it requires all supply chain members to work together towards a common goal of serving the consumer. Sensitivity – is also key in an agile supply chain strategy. It’s about being alert and being able to quickly identify changing market conditions. When there’s a great deal of supply or demand uncertainty, it is critical to be sensitive and identify changes as soon as possible. Without that, supply chain members cannot react quick enough and the quick reaction is the essence of agility. Supply chain agility can also be enhanced by innovative processes. For example, postponement activities can reduce lead times and increase responsiveness under uncertain demand conditions without increasing costs. Capacity or inventory buffers also enable operations to withstand unpredictable spikes and demand or supply shortages. Leveraging information is important in any supply chain and it’s even more important in agile supply chains. Supply chain partners need a high degree of information sharing, this requires them to have a high degree of connectivity and even being virtually integrated. Leveraging information is key to collaborative efforts for

⁹ Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", *California Management Review* 44(3):p114 April 2002

¹⁰ M. Fisher, "What is the Right Supply Chain for Your Product" *Harvard Business Review*, 75/2 (March/April 1997): p105-116

relationships and for sharing the market sensing insights in a changing environment. When demand and supply uncertainty are high, one of the best ways to combat this difficult situation is to share information in a timely and accurate format. Finally, flexibility – is the essence of agile supply chain strategy. People and processes both need to quickly change and respond to evolving supply and demand conditions. People need to be open to constant change and have an attitude that embraces an uncertain environment. Likewise, processes need to be designed in a way that enables quick modification to meet new demands.

To recap, we can see in the following table when to apply the appropriate supply chain strategy regarding different levels of supply and demand uncertainty.

		Demand uncertainty	
		Low (functional products)	High (innovative products)
Supply uncertainty	Low (stable process)	Efficient supply chains	Responsive supply chains
	High (evolving process)	Risk-hedging supply chains	Agile supply chains

Figure 2: Hau Lee's Uncertainty Matrix ¹¹

Source: Professor Hau Lee, Stanford University

Trends of supply chain management

Globalization and its impact on supply chain management

Nowadays the term globalization describes the emergence of worldwide interconnectedness: people, institutions, knowledge and culture. This is most apparent in economic institutions that allow the expansion of markets by reducing the barriers both geographically and

¹¹ Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", California Management Review 44(3):p114 April 2002

institutionally. Companies are then able to expanse their operations across borders, leading to the movement of capital, production and human resources.¹²

The term globalization was coined in the 1980s as a result of Theodore Levitt's article "The Globalization of Markets"¹³, published in Harvard Business review in 1983, which predicts the advent of a global market that replaces national markets. The expression quickly seduces the business world: companies are becoming more anxious to present themselves as "global", with slogans such as "The world is our audience" (Time Warner) or "Your bank all over the world" (HSBC).

To recap, a good management of the supply chain allows an optimized production in order to deliver to the final customers the best possible products in the best condition at a shortest time, while reducing the cost of the whole chain. However, managing this supply chain is sometimes difficult due to globalization.

Here we will discuss the economic globalization and its relationship with the supply chain. Unlike globalization, which has a broader meaning, and which refers to the development of the links of interdependence between men and women, human activities and political systems on a world-wide scale, economic globalization concerns mainly the global economic exchanges: goods and services, production factors – capital, work knowledge, etc. Among the characteristics of the current phase of globalization, economic activities are no longer organized on a national scale. The gradual disappearance of trade and investment barriers and the progress of ICT (information and communication technologies) and the progress of the management systems have allowed the relocation of production processes in different countries to take full advantage of cost reduction, availability of raw materials and more favorable regulations. As a result, there is an increasing proportion of production which is functionally integrated into coordinated system on a global scale. This shift has affected on different level of global economic integration and complex supply chains. Even though this type of structure makes it difficult for a company to manage all the networks of suppliers, which increases the complexity of the purchase, outsourcing is increasingly seen as a value creation that can provide multinational companies with a competitive advantage. Such a development unfortunately has important social and environmental implications and there is growing concern about the tension between market pressures and the sustainability of the global supply chain. In many sectors, such as textile and toy industries, the labor market is more flexible and outsourcing relationships are widespread. Many pressures – price, flexibility, unrealistic deadlines and expectations of quality, lack of education and

¹² Robert O. Keohane and Joseph S. Nye, Jr, Globalization: What's New? What's Not? (And So What?).Source: Foreign Policy, No. 118 (Spring, 2000), pp. 104-119

¹³ Theodore Levitt, The Globalization of Markets, 1983, <https://hbr.org/1983/05/the-globalization-of-markets> [Accessed: 21 February]

knowledge, and the weak bargaining power of suppliers – are often reinforced when moving to lower levels of a global supply chain. To address this evolving environment, several strategies have been developed, which include search for low-cost sources of supply in geographically dispersed areas; reduction of supply cycles; information systems improvement; transition from manufacturing to distribution, collection of best data of demand based on short-term forecasts.

Just-in-time (JIT), Six Sigma, Total Quality Management (TQM), Business Process Management (BPM), Third Party Service Provider (3PL)

Just-in-Time (JIT) – Toyota helped to create one of the smartest production systems that we have nowadays. After World War II, Japan faced some difficult problems which included lack of cash to finance purchases, scarce resources and limited land to expand factories. However, by slowly creating Just-in-Time system, Taiichi Ohno at Toyota managed to turn these problems into advantages. The philosophy behind JIT is to make the entire production system only work with what it needs and to minimize wait times between each stage. In other words, Just-in-Time or lean production aims to ensure that inputs into the production process only arrive when they are needed. The big saving is normally around inventory.¹⁴ Before JIT, a company would keep a warehouse filled with the parts and raw materials it needed. When supplies were getting low, they would have reordered when they had just enough to keep going until the new delivery came. But Toyota realized that it would be more efficient for the company to just keep making that same order as soon as the next one arrives, this way, company never need to keep a stockpile of spare parts. The cost saving would be big since warehousing is very expensive because company has to pay for massive space, power, staff, security and for unused parts.

Six Sigma is a problem-solving methodology which is centered around defect reduction and variation management, executed in the form of a disciplined, data driven and time bound project, always sponsored by the top management in an organization.¹⁵ Six Sigma is originated at Motorola in 1986 and has gained world popularity within a decade. General Electric has reported tangible benefits of 2.5 billion USD per year thanks to Six Sigma initiatives and has made it a central organization wide strategy. Six Sigma has been existing for over three decades now and has remained amongst one of the most used methodologies across industries. With every Six Sigma project, we start with a high variation, on average

¹⁴ Francesco Giordano and Massimiliano M. Schiraldi (March 13th 2013). On Just-In-Time Production Leveling, Operations Management, Massimiliano M. Schiraldi, IntechOpen, Chapter 2

¹⁵ Dag Näslund, (2008) "Lean, six sigma and lean sigma: fads or real process improvement methods?", Business Process Management Journal, Vol. 14 Issue: 3, p.269

we have high number of defects or mistakes or unnecessary steps in the process. Therefore, Six Sigma methodology is used to reduce these numbers and to improve the processes.

Total Quality Management (TQM) - TQM is a management strategy that continues to improve the quality of products and of process of production. It focuses on ways in which these processes can be managed with two key objectives: to reach 100% customer satisfaction and to make zero defects. The principles of TQM are Customer-Focus – the company must place the customer at the center attention in order to understand their needs so that company can meet or exceed customers' expectations, Leadership – by establishing an unity of purpose and organizational direction where all members of an organization can share a common goal, Involvement of People – by creating a working environment without fear that encourages every employees' involvement and achievement of the organization's objectives, Process Approach – to recognize that accomplished things are the result of processes, Strategic and Systematic Approach to Management – a company's strategic plan must incorporate quality as a core component, the strategy here is to do the right things right at the first time and every time, Continual Improvement – to create a culture of continuous improvement for zero defects, zero errors and zero accidents, Factual Approach to Decision Making – it is vital that decisions must only be based on accurate, relevant and reliable data and information, Mutually Beneficial Supplier Relationships – the company and the supplier can both benefit from one another's resources and know-how resulting in value for all. Total Quality Management, however, has limitations. Cost in time and money is part of the limitations since implementing TQM systems can take many years, during these years, substantial costs can accrue due to the lengthy process of training employees which also takes a significant investment by the company in terms of money and the utilization of resources. Fear of change is also part of the limitations.¹⁶ Because of increasing global competition, many organizations are replacing their traditional approach with the TQM approach. However, there are employees that resist change due to uncertainty doubt and fear from the rapid global changes.

Business Process Management (BPM) – at the core, BPM is a process or workflow. It is a series of steps or activities that people or system perform according to a logical path in order to achieve goal. Every business executes a large amount of processes on a daily basis. Not all these processes are efficient. Early workflow software focuses mainly on enabling users to map out such processes in a visual manner and execute them in order to achieve goal of improving efficiency. The usage of BPM software helps companies create value across the business. This is possible by reducing manual entry, improving processing times, therefore, making companies more responsive.¹⁷ That improves customer satisfaction, drives

¹⁶ Douglas, T and Judge, W. (2001). Total Quality Management Implementation and Competitive Advantage: The Role of Structural Control and Exploration. *Academy of Management Journal*. Vol. 44, No. 1. p. 158.

¹⁷ Dag Näslund, (2008) "Lean, six sigma and lean sigma: fads or real process improvement methods?", *Business Process Management Journal*, Vol. 14 Issue: 3, p.275

innovation and business growth and can reduce risk. Another aspect of BPM platform is having them available as either on-premise or cloud offering. The flexibility of being able to move between them as needed maximizes usability with lower costs. Companies that utilize BPM can become more agile and see increased profitability through decreased costs and increased revenue.

Third Party Logistics (3PL) – it may be beneficial for companies to outsource certain segments of their supply chain. A 3PL provider is an external organization that provides logistic services for some or all of their customers supply chain management function. The 3PL organizations can be either asset-based or non-asset based. The non-asset-based provider will perform more of a consulting functions on subjects pertaining to packaging, freight quoting, transportation, settling freight disputes, tracking shipments, customer service issues in cost cutting tactics. The non-asset provider will not own trucks, employees warehouse personnel or warehouse space for inventory storage. This type of provider is mainly made up of people who have gained expertise in logistics field and support their customers by offering help in areas of logistics that are challenging and costly. The asset-based provider will provide warehousing space in personnel. They may own trucks and have drivers on staff. They support their customers by offering tangible services.

3. Key factors to successful supply chain management

Customer relationship management (CRM)

The customer relationship management is an application that enables companies to make the move towards being a customer centered organization by putting the customer at the center of all the information that relates to them and allowing authorized people within the organization to access information. Similar to the 4Ps of marketing, CRM has 7Cs which are Convenience, Customer value and benefit, Cost to the customer, Computing and category management, Customer franchise, Customer care and services and Communication and customer relationships. The components of CRM are Strategy, Process, People and Technology.¹⁸ The objectives of a CRM are to provide products and services that exactly match customer requirements, to offer better customer service, to retain existing customers and to find new customers and to assist the marketing department. When these objectives are met, customers of a customer centered organization should and would feel more valued. The requests are dealt with more rapidly and accurately because all the information required to service the requests is in one place. Customer centered organization may have higher retention rates than competitors organized along traditional lines. CRM is about gaining and

¹⁸ Lakshman Jha, Customer Relationship Management: A Strategic Approach, Global India Publications, 2008, p1-8

retaining customers, by leveraging a CRM system, organization can document and react to customers' experience based on information collected over time. Examples of the types of information that can be tracked in a CRM system include, but are not limited to, the followings: a customer's contact information, business and personal, recent customer activity, customer support issues or cases and the status of their resolution commitments that have been made to the customer.¹⁹ So, in another word, Customer Relationship Management has the business purpose of intelligently finding, marketing, selling to and servicing customers.

Logistics

The word "logistics" was first used in the army and was extensively referred to during the World War II for the movement of supplies, men and equipment.²⁰ In business, Logistics is the movement of goods from the point of origin to the point of consumption. For example, after manufacturing of any product, all the activities that a company do to let that product reach its end consumer is called logistics. These activities, part of the supply chain, include manufacturing, warehousing, transportation, inventory management, order processing. The types of logistics are Inbound Logistics, Outbound Logistics and Reverse Logistics. Inbound Logistics mean whenever we receive the products in our warehouse and whenever we send the products to anywhere from our warehouse, this is called Outbound Logistics. Reverse Logistics, also called Return to Origin, mean whenever customers return the products back to the company. Logistics is concerned with getting the products and services wherever they are needed and whenever they are required. Logistics is the designing and managing system in order to control the flow of materials throughout an organization. In a nutshell, logistics is the key to the success of a supply chain management.

Logistical system is designed to achieve the following objectives for an organization: rapid response, minimum variance, minimum inventory, consolidated movement, quality and life cycle support. Rapid response – it is vital for a firm to have the ability to satisfy customer service requirements in a timely manner. Minimum variance – variance is an unexpected event that disrupts performance of a system. Variance may occur when there is delays in expected time of customer orders, unexpected disruption of manufacturing. It may happen because the goods arriving at the customer's location may be damaged or the delivery may be at the wrong location. The operational areas of logistics are subject to potential variance.²¹ With the use of IT, logistics tries to minimize variance in the operations. Minimum inventory

¹⁹ Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.16

²⁰ Martin Christopher: LOGISTICS & SUPPLY CHAIN MANAGEMENT. Financial Times Prentice Hall (is an imprint of Pearson. Edinburgh Gate, Harlow CM20 2JE Fourth edition 2011. P 1-2

²¹ Martin Christopher: LOGISTICS & SUPPLY CHAIN MANAGEMENT. Financial Times Prentice Hall (is an imprint of Pearson. Edinburgh Gate, Harlow CM20 2JE Fourth edition 2011. P 33

– to achieve minimum inventory, the logistical system design controls the inventory commitment and the turn velocity. Total commitment is the financial value of inventory deployed throughout the system whereas turn velocity is the rate of inventory usage over time. The objective here for logistics is how to minimize the financial value of inventory which is being deployed throughout the system at a particular time while also trying to increase the turnover rate of the inventory. Consolidated movement – the most important cost related to logistics is transportation. It is directly proportional to the type of the product, the size of the shipment and the distance traveled. It is desirable to achieve movement consolidation for a firm in order to decrease the transportation cost. To achieve that, smaller shipments need to be grouped together for consolidated movements. Quality – as it should be an objective to logistics because when quality fails, logistical performance needs to be reversed and then repeated thus commitment to Total Quality Management (TQM) is necessary to improve the logistics management. When there's an incorrect shipment or when there's damaged products during the transit, a company has to rework its customer's order which will be more costly than performing it right the first time. Therefore, logistics is a main part of developing and maintaining continuous Total Quality Management improvements. Life-Cycle Support - nowadays, most of the products are sold with guarantees that they will perform over a period of time. If a particular product does not perform as it should, to ensure the guarantee, a normal value-added inventory flow towards the customer must be a two-way route. The customer should also have the option and facility to return the product back to the factory. Product recall is also as important, that may be resulted from increasingly rigid quality standards, product expiration dating and responsibility for hazardous consequences. Additionally, environmental concerns require the capacity to recycle and reuse ingredients and packaging materials where again the reverse logistics movement would be essential.

Purchasing management

Purchasing is one of the key activities in materials management function of an organization. Inventory management is directly linked to purchasing management. Purchasing function is generally referred as procurement. Any inventory control system is directly influenced by purchasing. The primary goals of purchasing are to ensure uninterrupted flows of raw materials at the lowest total cost, to improve quality of the finished goods produced and to optimize customer satisfaction. By actively looking for better materials and more reliable suppliers and working more closely with strategic suppliers to improve quality materials, purchasing helps companies to reach the stated objectives.²²

²² Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.128-138

The 7 critical dimensions of the purchasing function are spend analysis – the process of collecting historical data by item purchased, it is based on historical consumption data and should display all expenses broke down per item per period per business unit. It is important to get the consumption numbers because they are crucial to demand management. Consumption rate, sales and production forecasts are the primary inputs to define sourcing strategies, capacity levels and to assure the supply required for business operations. Specifications / statements of work (SOW) – here the purchasing personnel should gather technical and functional requirements. They have to ensure that all transactions are well documented. By combining requirements from distinct areas, they can reduce the overall cost. Category management – the purchasing team develops insights to align internal needs and external sources. To facilitate the work, internal resources and external sources are grouped by related products and type of application. Supply evaluation is one of the most important activity conducted by the purchasing team. The primary objective is to reduce supply risks and optimize the value added to the company. Contract management and cost management are the two tasks under the direct responsibility of the purchasing team. The purchasing department is usually the primary contact with suppliers and also should control and manage the purchasing costs. Supplier relationship – here the purchasing team works on day-to-day transactions to mitigate supply risks, identify opportunities for cost reduction and managing suppliers' performance. Another key task is to develop the purchasing organizational structure and its governance procedures. Therefore, the supply strategy involves spend analysis, demand management, specifications, category and supplier management, contract management, cost management, purchasing process and supply relationship management.

We can divide the purchasing types into materials – raw materials, components, goods, materials, repair, operation (MRO items), production items, services – outsourcing, transportation, 3PL, supporting service, specialized services, investment – projects, facilities, equipment and situations – new buy, modified rebuy and straight rebuy. When company faces a purchase of a new product or service for the first time, there are several uncertainties about the product itself and the supplier. In the modified buy case, the company buys an existing product from a new supplier or a new product from an existing supplier. It is considered an operation with less risk than a new buy because the company has the knowledge about the product or the supplier performance. The less risky situation is when the company is purchasing a known product from a known supplier. This is called straight rebuy.

In the following chart, we can see an example of a purchasing process.



Figure 3 Purchasing Process²³

The purchasing process begins with the identification of the needs, those can be defined during the planning, during a product development, in new projects or during the production process.²⁴ In the production planning, the sales forecast forms the aggregate and material requirement plan (MRP). It is possible to determine the quantity and dates for raw materials, components and semi-finished goods needed to meet the production plan based on the MRP. The requisitioning involves the specification, describing material characteristics, quantity and date in which the materials are required. When it comes to services, a statement of work should be elaborated to guide the contracting process. The Business units inform the needs and the descriptions through a purchase requisition. Supplier identification and selection involves the task identifying possible suppliers and how to evaluate them. The effort dedicated to this task depends on the size and the value of the purchase. Supplier's type, size, location and risks are important points to be evaluated. Also, the kind of approach will be used such as bidding, negotiation. After the supplier selection, the purchasing team has to negotiate the contract. The contract establishes how purchase orders will be issued, due dates, lead times, prices, times to respond or delivery, acceptance procedures, payment process and implications in case the supplier fails to meet the contract conditions. When receiving

²³ Purchasing Process, <http://mytypings.com/business-buying-process/> [Accessed: 28 February]

²⁴ Tony Wild, *Best Practice in Inventory Management*, Third Edition, Routledge (2008) p.153

materials, the purchasing department should coordinate the receiving, inspection, confirmation the information on the purchase order, invoice and the receiving report. This confirms that the material ordered was delivered and charged correctly. After receiving, the purchasing department should authorize the payment according to the contract terms, also the purchasing department should measure and report the supplier performance periodically.

Forecasting and Demand planning

Forecasting is a very important tool because the rest of the planning of the entire supply chain depends on it. In other words, forecasting is the basis for all strategic and planning decisions in a supply chain. If we look back at Professor Hau Lee's uncertainty matrix, the forecast accuracy varies according to the uncertainties. The forecast tends to be more accurate when the supply and demand uncertainty is low and become more inaccurate when the uncertainties are high. Some of the characteristics of forecasts are forecasts are always imperfect, since they are just projections, long-term forecasts are less accurate than short-term forecasts and aggregate forecasts are more accurate than disaggregate forecasts. The forecasting methods are primarily classified in 2 categories. One is qualitative and the other is quantitative. Qualitative methods are very subjective, for example, qualitative methods are used when there's a lack of data, companies have to rely on experts' opinion.²⁵ Qualitative methods are mostly used for long-term forecasting, usually 1 year or more. In the other hand, whenever there's available data, companies will always use the quantitative forecast methods. The most popular quantitative method is time series. Time series method can be used for immediate requirement as well as intermediate requirement. The other quantitative method which is widely adapted is causal analysis – cause effect analysis meaning the relationship between demand and some other factors (income level, advertising expenses, cost of the product, etc.) to develop a forecast.²⁶

Every organizational function relies on forecasting for numerous reasons. Forecasting allows the marketing department to estimate the demands, future trends. It allows finance department to set budgets, to predict stock prices. It helps companies to manage their operations more efficient, to have better capacity planning, scheduling and to better control their inventories. And without a doubt, forecasting allows companies to select better suppliers and to make better purchasing decisions.

²⁵ Chopra and Meindl (Chopra, Sunil, and Peter Meindl, SUPPLY CHAIN MANAGEMENT – FIFTH EDITION. PEARSON 2013 Knowledge Boulevard, Sector 62, Noida 201 309, Uttar Pradesh, India., Chapter 7)

²⁶ Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.156-166

A lack of forecasting and planning or the independent forecasting among supply chain member will cause a mismatch between supply and demand, hence it will result the rise to the bullwhip effect, which I will discuss next.

Resource Planning

Resource planning encompasses all the processes of determining the production capacity required to meet the demand. The capacity here refers to the maximum workload that an organization is capable of completing in a given time period. Usually, a poor resource planning application will result a situation where the organizational capacity cannot meet the demand, in other words, there will be underutilized capacity and unfulfilled orders. In addition, the excess capacity results in high production costs per unit, the overcapacity can also result in lower quality products and stressed workers. Therefore, the goal of resource planning is to minimize this discrepancy because it is critical to balance production plan with capacity.

It is important to discuss about the demand distortion along the supply chain – we call that the “bullwhip effect”. The bullwhip effect is the unexpected distortion of the supply chain caused by repetitive variation in demand. The unplanned demand from the retailer oscillates back to the distributor and finally to the supplier, magnifying through each level of the supply chain. This is called bullwhip effect because as the oscillating demand magnifies upstream in the supply chain, it is reminiscent of a cracking whip.²⁷

²⁷ Chopra and Meindl (Chopra, Sunil, and Peter Meindl, SUPPLY CHAIN MANAGEMENT – FIFTH EDITION. PEARSON 2013 Knowledge Boulevard, Sector 62, Noida 201 309, Uttar Pradesh, India., Chapter 10)

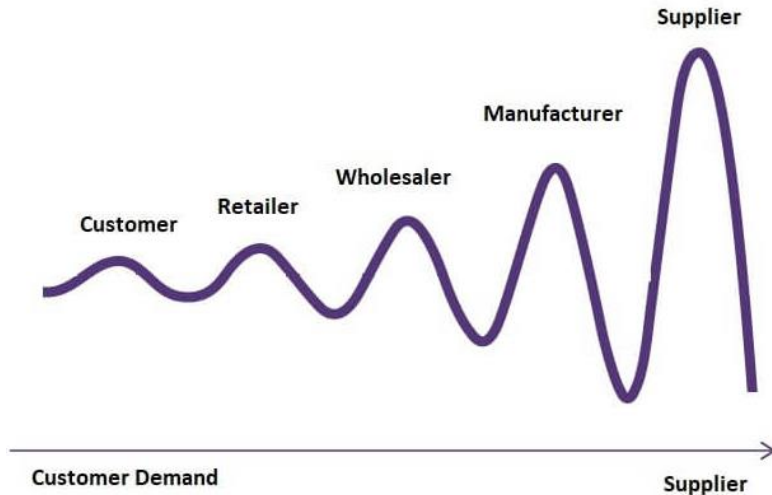


Figure 4: Bullwhip Effect²⁸

Why is this a problem? This can result a negative effect on business performance such as inventory disruptions (insufficient inventory to fulfill the demand), quality control problems (rush in manufacturing process), diminished customer service (customers get upset because their orders are being delayed) and increased cost of material and manpower (working overtime). To further explain the bullwhip effect, let's look at an example of Procter&Gamble, manufacturer of Pampers disposable diapers.²⁹ It doesn't reduce to the supply and demand chain which is similar to most supply demand chain. There is your typical retail store "A MART", one of many which stocks in sells of Pampers diapers. In the weekend, "A MART" is having a sale of diapers at 50% of the price, the target customers, in this case all the mothers with their newborns, are excited so they are planning to stock up. Procter&Gamble's factory gets the big order and starts manufacturing in overdrive, but first it has to negotiate with the union regarding overtime pay and get a lot of more supplies from its suppliers to get the production on track. The supplier then is not prepared for the sudden large order and do not have enough raw materials required to make the diapers because they do not have enough stock. Therefore the supplier causes additional delay in production. Meanwhile "A MART" places its another order that is bigger than usual as it faces an increase on sales with no stock left. The distributor, in turn, runs out of stock and is not capable of

²⁸ Bullwhip effect illustration, Source: <https://www.bizskinny.com/Supply-Chain-Management/bullwhip-effect.php> [Accessed: 5 march]

²⁹ Hau Lee, The Bullwhip Effect in Supply Chains. Spring 1997, Volume 38, Issue 3, p.93-102

covering the orders. So, the distributor places yet another big order and so forth it continues along the supply chain because no one is getting their orders. They carry on placing bigger orders stall, compounding the problem. Ultimately, the factory is taking strain, suppliers are under pressure, distributors are alarmed, retailers are getting upset because they don't get their orders and end customers are upset. By the time the factory starts delivering, everybody downstream starts cancelling their orders and the factory is left with an oversupply of stock.

What causes the bullwhip effect and how we can prevent it?³⁰ There are numerous factors, often in combination which contribute to the bullwhip effect. Four major causes are price fluctuations and sales promotions – sales promotions and price discounts resulting customers buying in large quantities and stocking up, as a result the buying pattern does not reflect the actual consumption. The following cause is order batching – companies place orders in batches often to avoid the cost of processing orders more frequently or to avoid the high transportation costs. The next cause is shortage gaming – when the product demand exceeds supply, manufacturers limit the distribution of their products or customers exaggerate their orders to counteract the rationing, eventually orders will disappear and cancellations will come in, these are making it impossible for the manufacturer to determine the real demand for its product. Demand forecasting inaccuracies – as each entity along the supply chain places an order, it replenishes stock and includes some safety stock with long lead times which make the fluctuation in demand more significant. There are possible countermeasures to prevent these. Countermeasure to fluctuating prices – fluctuating prices can be replaced with everyday low prices. Countermeasure to order batching – more frequent ordering results in smaller orders and smaller variants. Counter measure to shortage gaming – proportional rationing schemes are countered by allocating units based on past sales, ignorance of supply chain conditions can be addressed by sharing capacity and supply information across the entire supply chain. Countermeasure to demand forecast inaccuracies – the inaccurate forecast of demand can be dealt with by providing access to point-of-sale data, single control of replenishment or vendor management inventory can overcome exaggerated demand forecasts, long lead times should be reduced as much as possible.

Inventory Management

The basic definition of inventory is a stock or store of goods. There are 5 types of inventories such as raw materials and purchased parts, partially completed goods called work in progress, finished goods inventories, replacement parts, tools and supplies which are used in during any manufacturing and good in transit to warehouses or customers. Inventory serves several purposes and there are many reasons why companies need to carry inventories. It is used to

³⁰ Chopra and Meindl (Chopra, Sunil, and Peter Meindl, SUPPLY CHAIN MANAGEMENT – FIFTH EDITION. PEARSON 2013 Knowledge Boulevard, Sector 62, Noida 201 309, Uttar Pradesh, India., Chapter 10)

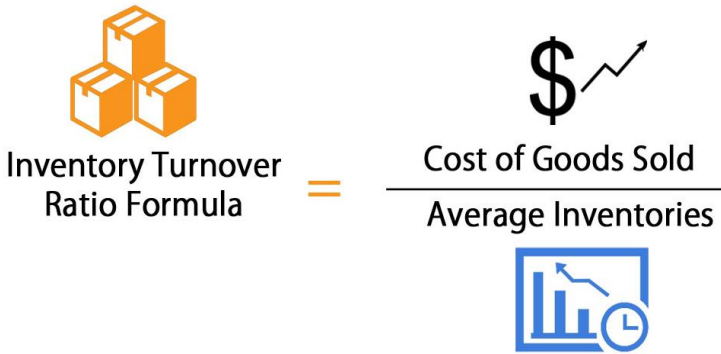
meet anticipated demand because in the case of independent demand, there is a lot of uncertainty involved so there could be fluctuations up and down. Inventory can be used for meeting anticipated demand to smooth production requirements like when there is a mismatch between capacity and demand.³¹ Inventory could be used to decouple operations, for example there are 3 operations required in a manufacturing process: suppose the machines at operation 1 are not functional, operation 2 and operation 3 will suffer if there is no inventory available because they will be sitting idle. With the availability of semi-finished materials in inventory, those parts will be used and fed into the operation 2 and 3 to prevent interruption of manufacturing process. The other function of inventory is to protect against stock-outs. It's called stock-outs when suppliers are unable to provide products to their customers due to their empty inventory.

The main objective of inventory control is to achieve satisfactory levels of customer service while keeping inventory costs within reasonable bounds. Achieving a good customer service and keeping the low cost of inventory are the two important variables for decision making when it comes to inventory control. Companies should balance cost with customer service at all time.³² A company can certainly keep a huge amount of inventory so they could deliver any items from the inventory when they are needed, but then keeping a lot of inventory is going to increase the inventory cost. One of the metrics that is used for measuring the performance of any inventory control process is Inventory Turnover. Inventory Turnover is "the ratio of average cost of goods sold to average inventory investment."³³ The higher inventory turnover rate reflects the more efficient management of inventory. Therefore, it is a good indicator to measure a company's performance during a year.

³¹ Hilton, Ronald W., *Managerial Accounting*, McGraw-Hill, Inc (1994). p.407

³² Tony Wild, *Best Practice in Inventory Management*, Third Edition, Routledge (2008) p.4

³³ C.Madhusudhana Rao, K.Prahlada Rao, Inventory Turnover Ratio as a Supply Chain Performance Measure, *Serbian Journal of Management* 4 (1) (2009) p46



The diagram illustrates the Inventory Turnover Ratio Formula. On the left, there is an icon of three stacked orange boxes. Below it, the text reads "Inventory Turnover Ratio Formula". In the center is an equals sign. To the right of the equals sign is a horizontal line. Above the line is the text "Cost of Goods Sold" and below the line is "Average Inventories". To the right of the line is a dollar sign icon with an upward-pointing arrow. Below the entire formula is an icon of a blue bar chart with a line graph and a clock.

$$\text{Inventory Turnover Ratio Formula} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventories}}$$

Figure 5 Inventory Turnover Ratio formula³⁴

There are certain requirements to result an effective inventory management, a company needs to have a system to keep track of inventory, to monitor or track what's available and how things are changing. It is necessary to make a reliable forecast of demand because a company always tries to keep its inventory to fulfill a demand. So, if the forecast is inaccurate, the inventory management will suffer.³⁵ Knowledge of lead times is also important because for example if we place an order to a supplier and if the lead time is known to be two days, but in fact it takes three or more days, this will certainly create some perturbation in the supply chain process. Reasonable estimates of Holding – holding cost is when the inventory is kept which will cost money and occupy spaces along with insurance cost, Ordering – every time an order is placed with a supplier which will cost money and Shortage costs – when the customer is looking for something and it's not available to the customer, there will be a cost involved the customer dissatisfaction, which may result the customer to not return. A good classification system is also needed: Periodic System – physical count of items made at periodic intervals (weeks, months), Perpetual Inventory System – keep track of removals from inventory continuously, therefore monitoring current levels of each item, Two-Bin System – two containers of inventory, as soon as one of the containers becomes empty, that's the indication that a reorder has to be made for that part or component, Universal Bar-Code – for monitoring and controlling inventory, bar code printed on a label that has information about the item to which it is attached, Radio Frequency Identification (RFID) – as the name suggests, this system uses radio waves to monitor different products, the advantage of RFID

³⁴ Inventory Turnover Ration formula, <https://www.wallstreetmojo.com/inventory-turnover-ratio-formula/> [Accessed: 7 march]

³⁵ Brent D. Williams, Travis Tokar, (2008) "A review of inventory management research in major logistics journals: Themes and future directions", *The International Journal of Logistics Management*, Vol. 19 Issue: 2, p.212-232

is that you do not need a direct line of sight unlike Bar Code scan. ABC Classification System is to categorize inventory according to some measure of importance and allocate control efforts accordingly. It is difficult for big companies to monitor each and everything by giving it equal priority since different items could be different in value and have different significance. Therefore, it is important, for practical reasons, to classify them in different categories. In ABC system, A is considered very important items which require the most managerial attention and review, B is moderately important items and C is the least important items that make up minor impact therefore the control systems should be as simple as possible to reduce wasted management time and attention.³⁶ ABC analysis is based on an Italian mathematician Pareto's rule, the observation is that 20% of the things or items makes the 80% of the contribution.³⁷

There are different inventory models which companies use, and the popular ones are Economic Order Quantity model (EOQ), Economic Production Quantity model (EPQ) and Quantity discount model. The main purpose of using these models is to determine an optimal order quantity and to minimize the sum of annual order cost and inventory holding cost.³⁸ In other words, when you order inventory, you do not want too little (stock-out) or too much (spoilage storage) because you have to bear the purchase cost, ordering cost, carrying cost. Therefore, you must balance to find an optimal order size. In this case, EOQ is used to solve this very issue.

$$\text{EOQ Formula}^{39}: \text{EOQ} = \sqrt{\frac{2SD}{H}} \text{ (units)}$$

EOQ = optimal order; S = order cost; D = annual units demanded; H = carrying cost

A company needs to place orders with outside suppliers and maintain an inventory to satisfy its own or its customers' demand. In some situations, a business may choose to produce goods internally rather than ordering them from an outside supplier. If a company meets demand by making its own products, the economic production quantity (EPQ) model will be more realistic than the basic EOQ model. The EPQ model aims to find the optimal production lot size that minimizes the total cost. The known parameters of EPQ model are (D) the total demand (units per year), (K) the unit setup cost (\$ per production run), (P) the unit producing cost (\$ per unit), (H) the unit holding cost per year (\$ per unit per year) and (R) the production

³⁶ Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.36

³⁷ Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.33

³⁸ Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) p.143-144

³⁹ EOQ Formula, <https://corporatefinanceinstitute.com/resources/knowledge/finance/what-is-eoq-formula/> [Accessed: 10 March]

rate (units per year). Normally, the production rate (R) should be greater than or equal to the demand (D), otherwise there will be shortages.

4. Other possibilities towards a successful supply chain management

In order to remain competitive in the future, companies will have to manage their supply chain more effectively. The main factors hindering the efficiency of supply chain management are the following:

- Customers demand better product quality, more choices and at lower price
- Products need to be able to be delivered around the world
- Rise of competitors

As pressures continue to increase, firms must step up in order to provide a vital competitive advantage. Many of today's big business cannot keep up the pace and hence, face failure. You will find below the possible activities that supply chain managers should consider in order to ensure that their businesses are ready to face the challenges that lie ahead.⁴⁰

- **Diagnosis:** ask yourself if your company is ready to face the globalization of consumer demands? What can you do to maintain an effective supply chain coordination within company and with your external partners? Are your performance indicators up to date? Such an assessment can provide a company with a specific path to develop its supply chain.
- **Strategy:** companies need to examine their supply chain strategy as an essential part of their overall business concept. How far can the company improve its integrated outsourcing, production and distribution capabilities to achieve superior economic value and customer satisfaction?
- **Business case:** CEO (Chief Executive Officer) and the Board of most companies are not convinced that the integrated supply chain approach will pay them interesting dividends. Supply chain managers and those who wish to play this role must have a priority to defend the integration of the supply chain. They need to support it strategically and practically with examples of service and cost gains from vertical integration.
- **Intelligence and not muscles:** set up a rigorous but small supply chain management team. The objectives will be to provide corporate leadership in the analysis, design and implementation of solutions that will bring service and cost efficiencies to new levels across the enterprise and with external partners.

⁴⁰ Martha C. Cooper, Douglas M. Lambert, Janus D. Pagh, (1997) "Supply Chain Management: More Than a New Name for Logistics", *The International Journal of Logistics Management*, Vol. 8 Issue: 1, p.1-14

- Electronic commerce: plan now for an internet-oriented supply chain. Marketers need to engage with those in the supply chain to see how orders on the internet can aid delivery by pushing cut-off time or even automated regular replenishment.
- Global suppliers: in order to support the new “virtual” organization, it is necessary to have real partners in the global supply chain. These organizations need to develop more high-level skills that are needed to coordinate the entire supply chains. They must offer a full range of services with new patterns of relationships and motivation. Major changes are already being felt in the business environment. Managers need to act now to ensure that they lead a successful supply chain into the 21st century.

5. Amazon

E-commerce

E-commerce has undoubtedly become a must for any company selling goods and services, whether physical or virtual. But also, for web entrepreneurs who have an interest in conducting their businesses globally. E-commerce is the best platform that offers incredible business opportunities, very flexible, and therefore the potential for development is enormous.

In general, electronic commerce is a subset of e-business, when e-commerce involves the process of buying, selling or exchanging products, services or information via the internet, whereas electronic business is a larger perspective of e-commerce. It doesn't only include the process of buying and selling goods and services, but it also encompasses servicing customers, collaborating with business partners and conducting electronic transactions within an organization.⁴¹

⁴¹ P.Candance, Deans University of Richmond, USA: E-commerce and M-Commerce Technologies – IRM Press 2005 (Publisher of innovative scholarly and professional information technology titles in the cyber age). United States of America 701 E. Cholocate Avenue, Suite 200. P 5-6

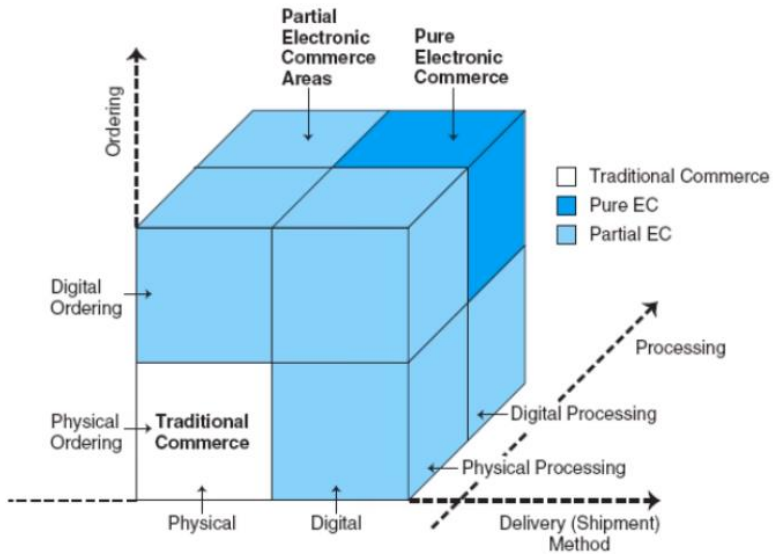


Figure 6 Dimensions of E-commerce⁴²

The major e-commerce (EC) concepts are Pure and Partial EC – where Pure EC involves everything happening on the internet, for example buying music or movies on iTunes, in the other hand, Partial EC involves the selling of a good on the internet but the order fulfilment of that good will happen in the real world, for example ordering a book online and it will be sent to you physically. In general, we have brick-and-mortar organizations, where old-economy organizations (corporations) conduct their primary business offline, they have physical stores; consumers are used to the needs for stores to buy the goods or services, where we can see the products in person, touch them. Virtual organizations – that only exist online, where everything is produced online, for example you buy a video game, the order process is done online, and you will get to download a licensed version of the game and you can play it on your personal computer, laptop or smartphone. Steam, Origin are good examples of virtual organizations. Click-and-mortar (click-and-brick) organizations that run some e-commerce activities, usually as an additional marketing channel. Walmart is a good example of click-and-brick organization since not only they have physical stores, they also sell their products online. E-Market is an online marketplace where buyers and sellers meet to exchange goods, services, information. A good example to illustrate this concept is eBay that involves not only Business-to-Consumer (B2C) e-commerce model in which businesses sell

⁴² Dimensions of E-commerce, <http://mar1720introcommerce.blogspot.com/2015/01/chapter-1-study-guide.html> [Accessed: 16 March]

to individual shoppers and Business-to-Business (B2B) in which all of the participants are businesses or organizations, but also Customer-to-Customer (C2C) e-commerce model in which consumers sell directly to other consumers.

Amazon: an overview

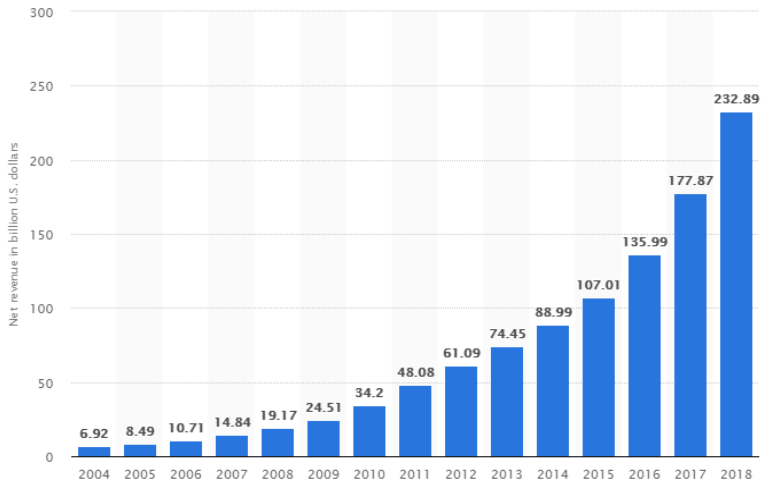


Figure 7 Net sales revenue of Amazon from 2004 to 2018⁴³

Amazon is undoubtedly the leader in their market field – e-commerce. From 2004 to 2018, Amazon’s net sales revenue has increased by approximately 34 times, from 6.92 billion US dollars to 232.89 billion US dollars. The success of Amazon.com and its exponential growth are the result of different factors which I will discuss in detail later in this chapter.

But first, let us get to know about the company. Created in 1994 by Jeff Bezos, headquartered in Seattle, Washington. Amazon is part of the first generation of e-commerce sites to have emerged. Specialized in its early days in the sale of books online, the startup has quickly established itself as a reference library for Internet users, before massively diversifying its product catalog. Jeff Bezos, founder and CEO of Amazon, has had his goal to create the earth’s most customer centric company. The core value of Amazon is customer obsession. Therefore, the company is built around the customer. From an operation and product

⁴³ Net sales revenue of Amazon from 2004 to 2018, <https://www.statista.com/statistics/266282/annual-net-revenue-of-amazoncom/> [Accessed: 16 March]

development standpoint, the company is always starting with the customer and working backwards. Amazon’s mission is to become a place where people can find and discover anything they want to buy online and over time, to be able to serve every individual on the planet. Ultimately, it comes down to price – to sell the product at a lowest price, convenience – to deliver the product as fast as possible and selection – to have as much as possible so customers can have more choices. These 3 factors constitute, how Amazon calls it, a “virtuous cycle of price”⁴⁴, selection and convenience. In other words, customers want more selection, Amazon brings more sellers onto the platform, as more sellers come onto the platform that bring more traffic to the platform, so on and so forth, this drives a better customer experience and enables Amazon to lower their cost structure, which allows them to lower prices and which, again, drives a better customer experience. Amazon often introduces themselves as a retail company and a technology company.

As of today, Amazon categorizes their customers in four segments. The first customer segment is their consumer customer segment, this would be Amazon.com, the Kindle, Amazon fresh, Whole Foods, etc., this is Amazon’s primary consumer business. The next segment is the sellers, more than half of the products that is available on Amazon is actually not owned or stored by Amazon. It’s owned by small and medium businesses all over the world who partner up with Amazon to sell their products. Amazon also has fulfilment centers, which is called Fulfilled by Amazon (FBA)⁴⁵, where they hold on and store the products from their partners, then Amazon will ship the products to the customers. The third group of customers are called the content creators and entrepreneurs. This involves, for example, Amazon Studios, Amazon Flex⁴⁶, etc. The last group of customers is enterprise customers. This includes Amazon Web Service, their cloud computing business.

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Brand, E-commerce leader	Weak operating margin	Acquiring new businesses	Heavy competition
Customer base and loyalty	Product flops	Releasing new products	Regulatory threats
Global presence	Technology breakdown	Promoting	
Large product range		Global expansion	
Cost leadership, agility			

Figure 8: Amazon SWOT analysis

⁴⁴ Amazon Virtuous Cycle, <https://fourweekmba.com/amazon-flywheel/> [Accessed: 16 March]

⁴⁵ Fulfillment by Amazon, <https://services.amazon.com/fulfillment-by-amazon/benefits.html> [Accessed: 16 March]

⁴⁶ Amazon Flex, <https://www.businessinsider.com/amazon-delivery-compete-with-ups-fedex-2017-10> [Accessed: 16 March]

STRENGTHS

The first thing that comes to mind is that Amazon is the world e-commerce leader, rising cloud business and the success of Amazon Prime are driving the brand fast growth. Prime membership globally has exceeded more than 100 million. The other Amazon strength is its large number of loyal customers. Amazon, with its core of customer obsession, creates a superior customer experience, superior customer service, better quality on merchandise and Amazon thrives on innovation. These can only result the ever-growing and loyal customer base. Amazon's next strength is its global presence, it has sellers and buyers around the world, businesses in more than 130 countries have their products enlisted on Amazon platform to sell their products to the global audience. Large product range plays as Amazon's strength, hundred of millions of unique products are available on amazon.com. Amazon is the go-to e-commerce for online shoppers around the globe. Amazon also focuses on delivering products to its customers at a competitive price and in a short time.

WEAKNESSES

One of Amazon's weaknesses is that the multi-billion-dollar company traditionally operates at a very low margin, below 3% comparing to Alibaba's 30%. Another weakness of Amazon is product flops – products made by Amazon is not always a success, some of its products have failed in the past such as Fire Phone, Kozmo or Kinder App. Technology breakdown is also one of the issues, considering a lot of businesses rely on Amazon Web Service, in 2016, the technology behind AWS was down for a short period of time, causing, for example Netflix or Airbnb, a great deal of problems. Such breakdown in the system might lead to a loss of confidence from the customers.

OPPORTUNITIES

Amazon's giant size and cashflow allows them to acquire other businesses. For instance, Amazon has acquired Whole Foods for 13.7 billion USD back in 2017. With an already large base of customers and having a biggest e-commerce brand, Amazon has the competitive edge when releasing and promoting its new products which can improve its revenue. Global expansion opens many doors for Amazon. Being successful in North America and in Europe, Amazon has the Asian market yet to conquer, for instance the South East Asia region, where Amazon can gain a big market share there.

THREATS

Amazon is facing heavier competition in both retail and cloud business. The competition is growing intensely, where Alibaba, eBay as online retailers or Oracle and Microsoft as cloud enterprises are competing with Amazon. Furthermore, legal and regulatory pressures are also

causing trouble for Amazon. For example, in 2017, Amazon has been fined 250 million euros in Europe over unpaid back taxes.

Supply chain, operations, innovations: The Amazon Way

Operating as an online retailer and a Business-to-Business service provider, Amazon owns very few physical stores. Amazon supply chain generally concentrates on the management of delivery and network of distribution centers. Constant innovation in the supply chain usually considered as the significant reason for Amazon to compete successfully with other similar businesses. For years, Amazon has been increasing investment in lowering delivery time of products, generating the option of same-day delivery and drone delivery. To make trip to Amazon warehouse is more efficient and faster, Amazon plans to release relay. The first trucking application which enables drivers to pre check-in and pass through security gates quickly. Amazon has also introduced the Dash button, by pressing this button, customers are able to order household supplies that they have pre-selected at Amazon. These innovations help collecting specific information about rising and falling demands, so they can adjust stocks to match the demand.



Figure 9 Fulfillment by Amazon⁴⁷

Amazon boasts over 70 fulfillment centers in the US and over 90000 full time employees. In order to achieve fast responsiveness, the company positions many warehouses in proximity to local urban markets. The location, size and the number of warehouses are important factors in Amazon supply chain success. In other words, Amazon strategically places its warehouses, positioning closer and closer to main metropolitan areas and city centers and as a result, it uses a pure push strategy for the products stored in its warehouses, on the other hand, Amazon uses a pure pull strategy when it sells the products from the third-party sellers. 100% of Amazon warehouses feature an extensive use of barcode scanners, a near constant cycle of order processing item picking and shipping. Ultimately, digitizing these processes allows Amazon to gain greater visibility into asset dispositions and shipping needs at any given time. Amazon is transforming the supply chain by using digital technologies to adapt its operations

⁴⁷ Fulfillment by Amazon, <https://medium.com/s/story/how-amazon-will-dominate-the-supply-chain-6727936d3ffc> [Accessed: 17 March]

to the specific needs of employees and partners in every setting. Amazon warehouses, started with barcode scanners to track items at all times, have evolved to a fully digital warehouse, distribution and fulfillment network that moves goods between locations with high efficiency. For Amazon, going digital sets a foundation for flexible, fast moving operations and this has allowed the multi-billion-dollar E-commerce company to make more dramatic strategic changes that are transforming how the supply chain works. In 2012, Amazon has acquired a provider of automated and robotic warehouse solutions called Kiva systems and that company was rebranded as Amazon robotics in 2015. The robots can pick and pack without needing any human assistance enabling Amazon to complete warehouse activities very fast. Over the years, Amazon has significantly increased its number of warehouse robotics, its warehouse robots have grown at the rate of 15000 per year from the year 2015. To date, Amazon's robotics have aimed at bringing goods to people for the picking of orders. The next generation of robots will be able to pick the orders on their own to reduce the need for human order pickers. In 2014, Amazon has launched its new generation fulfillment center that contains the most innovative technology and robotics.

The e-commerce giant focuses on its logistics. Customers can order many products that Amazon has. If consumers order more items one time and want to put them in one box, Amazon has the ability to ensure that items can be delivered in the least amount of time. When a customer submits the order, the item will be delivered to an outbound area where Amazon employees will put the items into a fitted box then the automated package process will deal with everything. After all the processes, the packages will be distributed through Amazon's spiral with full of belts, then the package will be loaded to the trailers and delivered to the customers. Every step is smooth to ensure that Amazon could lessen the time to ship the package.

Amazon distribution model⁴⁸: distributor storage with carrier delivery – this model illustrates that manufacturers will deliver their products to the warehouses, when customers place orders, the products that are stocked in the warehouses will be distributed through different shipping methods to the customers. For Amazon, its inventory is held by its own warehouses, not by its manufacturers. It also combines this network model with the drop shipping service from its manufacturers. The items that Amazon chooses to stock would be only slow-moving or high demand products to reduce the risk of out of stock. Recently, Amazon has tested new ways to deliver customers items. Amazon Prime Air – an innovative delivery system that Amazon designed to get packages to customers in 30 minutes or less using unmanned aerial machines (drones). It is still in an experimental stage and not yet prevailing. However, this is not science fiction, it is all real. Amazon has set up experiments privately to test this drone

⁴⁸ Amazon Distribution Model, <https://www.thebalancesmb.com/how-amazon-is-changing-supply-chain-management-4155324> [Accessed: 17 March]

distributing system and has faith that one day, Prime Air would be the trend in the future. Besides Amazon Prime Air, Amazon provides the Shipping with Amazon (SWA) service, the concept of this new service is that Amazon will pick up packages from businesses and deliver by its own freight and fleet to the customers, not through the third-party shipping companies. This would mean that Amazon plans to take control of its whole supply chain.

Every second on amazon.com, hundreds of vendors are uploading and editing product information, thousands of customers are searching products and numerous packages are moving towards customers. To compete with traditional on-site shopping, Amazon built its logistics system to shorten delivery time. Customers who pay \$99 per year for Amazon Prime are able to receive products in 2 days. In 2017, One-hour delivery is available in 49 cities of 7 countries. To improve responsiveness, Amazon released the Dash button, it allows customers to place orders by one press without computers or smartphones. Customers can also make orders by voice order through Alexa. Amazon-Go allows customers to pick and go without waiting in line to check out. That is Amazon Information Technology which connects data, process, facilities, computing systems and people together to make that happen. At the very beginning of 1995, Amazon used different systems for website and order fulfillment to improve security. In 2000, Amazon spent 200 million dollars to renovate the entire system, including analysis software, a logistics system from managed logistics and database management system from Oracle for communication with supplies.



Figure 10 Amazon Web Service⁴⁹

Amazon develops Amazon Web Service (AWS)⁵⁰ and simple storage service by themselves, launched in 2006, by which Amazon can handle a vast number of products and customer information. All these systems generate efficient supplier relationship management, customer relationship management and internal supply chain management. AWS is a subsidiary of Amazon, that provides cloud computing platforms to customers and to Amazon itself. AWS capability includes computing storage, networking, database, analytics and application

⁴⁹ Amazon Web Service, <https://medium.com/s/story/how-amazon-will-dominate-the-supply-chain-6727936d3ffc> [Accessed: 19 March]

⁵⁰ Amazon Web Service, <https://www.theguardian.com/technology/2017/feb/02/amazon-web-services-the-secret-to-the-online-retailers-future-success> [Accessed: 19 March]

services. AWS provides in time large-scale computing capacity. All Amazon innovations such as the Dash button, Alexa, drone delivery and Amazon Go rely on AWS. Take Alexa as an example, launched in 2014, when a voice order is given to Alexa, the order is passed through the internet to AWS. AWS analyzes the order by cloud computing and sends feedback to Alexa, Alexa then replies to each customer accordingly. All these processes are finished in one second.

	Dec 31, 2018	Dec 31, 2017	Dec 31, 2016	Dec 31, 2015	Dec 31, 2014
<i>Selected Financial Data (USD \$ in millions)</i>					
☒ Cost of sales	139,156	111,934	88,265	71,651	62,752
☒ Inventories	17,174	16,047	11,461	10,243	8,299
<i>Ratio</i>					
☒ Inventory turnover ⁵¹	8.10	6.98	7.70	7.00	7.56
<i>Benchmarks</i>					
<i>Inventory Turnover, Competitors</i>					
Costco Wholesale Corp.	11.16	11.38	11.47	11.35	11.64
Home Depot Inc.	5.22	4.96	4.93	4.89	4.65
Lowe's Cos. Inc.	3.97	4.07	4.07	4.11	3.83
Target Corp.	5.91	5.88	6.05	5.83	5.84
TJX Cos. Inc.	6.09	6.47	5.96	6.46	6.61
Walmart Inc.	8.53	8.39	8.12	8.09	7.98
<i>Inventory Turnover, Sector</i>					
General Retailers	7.67	7.43	7.42	7.34	7.33
<i>Inventory Turnover, Industry</i>					
Consumer Services	8.87	8.67	8.59	8.28	8.35

Figure 11 Amazon Inventory turnover from 2014-2018⁵¹

Figure 11: Amazon Inventory turnover from 2014-2018

From the launch of Amazon Alexa to December 2018, the cost of sales and the inventories have doubled up. Increasing from 62752 million to 139156 million USD and from 8299 million to 17174 million USD respectively.

Inventory Turnover (2014): $63752/8299 = 7.56$

Inventory Turnover (2018): $139156/17174 = 8.10$

Not only Amazon has doubled its volume in sale, Amazon has also been able to maintain a fast pace to convert their current assets into cash, which ultimately translates into their rapid growth and reflects how competitive and efficient Amazon is managing its supply chain.

⁵¹ Amazon Inventory turnover from 2014-2018, <https://www.stock-analysis-on.net/NASDAQ/Company/Amazoncom-Inc/Ratios/Short-term-Operating-Activity#Inventory-Turnover> [Accessed: 21 March]

Conclusion

It is, without a doubt, that Amazon is doing a good job in supply chain management thanks to its innovations built strictly around its customers and to its supply chain optimization technologies. With the launch of Amazon Web Service in 2006 and simple storage service, Amazon formed a completed system which allowed it to master its supplier relationship management, customer relationship management, and internal supply chain management. Following that, Amazon optimized its Logistic and Warehouses Network by placing its storages closer and closer to main metropolitan areas and city centers. Furthermore, the adaptation of digital technologies has created a great hedge on facilitating Amazon's warehouse operation. And most recently, Amazon aims to advance their Distribution system with "Amazon Prime Air" which expects to get packages to customers in 30 minutes or less using unmanned aerial machines. However, there are components and aspects of the supply chain management of Amazon where improvements can be made. First, Amazon can set up its own transportation and actualize superior last mile delivery by creating its own fleet of delivery vehicles and personnel. To a great extent, Amazon relies on courier companies such as FedEx and UPS. In recent years, Amazon brand image has taken a hit because of the unreliability of the last mile connectivity or the last part of the supply chain management that is visible to the end consumer. Second, Amazon can integrate its supply chain management better and move from a cooperation model with the suppliers to a coordination mode, this close coordination mode entails a sharing of information between all its partners and suppliers using the latest technology to expend its supply chain surplus. Amazon continues to innovate its distribution methods to fulfill its consumers with more convenient and fast delivery. We, as Amazon's customers, partners, can expect Amazon to keep introducing the unexpected way to serve its extensive markets.

6. Bibliography

- [1] Brent D. Williams, Travis Tokar, (2008) "A review of inventory management research in major logistics journals: Themes and future directions", The International Journal of Logistics Management, Vol. 19 Issue: 2, p.212-232
<https://doi.org/10.1108/09574090810895960>
- [2] C.Madhusudhana Rao, K.Prahlada Rao, Inventory Turnover Ratio as a Supply Chain Performance Measure, Serbian Journal of Management 4 (1) (2009) p46
- [3] Cheng TCE and Podolsky S, 1993, Just-in-Time Manufacturing - an introduction, Chapman and Hall, London. P12-44
<https://books.google.hu/books?id=WL95yzpj1TIC&printsec=frontcover&hl=fr#v=onepage&q&f=false> [Accessed: 18 February 2019]

- [4] Chopra and Meindl (Chopra, Sunil, and Peter Meindl, SUPPLY CHAIN MANAGEMENT - FIFTH EDITION. PEARSON 2013 Knowledge Boulevard, Sector 62, Noida 201 309, Uttar Pradesh, India., Chapter 1,7,10)
- [5] Dag Näslund, (2008) "Lean, six sigma and lean sigma: fads or real process improvement methods?", Business Process Management Journal, Vol. 14 Issue: 3, p.269;275. <https://doi.org/10.1108/14637150810876634>
- [6] Douglas, T and Judge, W. (2001). Total Quality Management Implementation and Competitive Advantage: The Role of Structural Control and Exploration. Academy of Management Journal. Vol. 44, No. 1. p. 158. <https://doi.org/10.2307/3069343>
- [7] Francesco Giordano and Massimiliano M. Schiraldi (March 13th 2013). On Just-In-Time Production Leveling, Operations Management, Massimiliano M. Schiraldi, IntechOpen, Chapter 2 <https://doi.org/10.5772/54994>
- [8] Gregory A. Harris, Paul J.Componation, Philip A. Farrington. Engineering Management Journal; EMJ 22(4);p31-43 · April 2015. <https://doi.org/10.1080/10429247.2010.11431877>
- [9] https://www.researchgate.net/publication/276090534_An_Exploration_of_Fisher's_Framework_for_the_Alignment_of_Supply_Chain_Strategy_With_Product_Characteristics [Accessed: 20 February 2019]
- [10] Hau L. Lee, "Aligning Supply Chain Strategies With Product Uncertainties", California Management Review 44(3);p113-114 April 2002. <https://doi.org/10.2307/41166135>
- [11] Hilton, Ronald W., Managerial Accounting. McGraw-Hill,Inc (1994). p.407
- [12] Lakshman Jha, Customer Relationship Management: A Strategic Approach, Global India Publications, 2008, p1-8
- [13] M. Fisher, "What is the Right Supply Chain for Your Product" Harvard Business Review, 75/2 (March/April 1997): p105-116
- [14] Martha C. Cooper, Douglas M. Lambert, Janus D. Pagh, (1997) "Supply Chain Management: More Than a New Name for Logistics", The International Journal of Logistics Management, Vol. 8 Issue: 1, p.1-14. <https://doi.org/10.1108/09574099710805556>
- [15] Martin Christopher: LOGISTICS & SUPPLY CHAIN MANAGEMENT. Financial Times Prentice Hall (is an imprint of Pearson. Edinburgh Gate, Harlow CM20 2JE Fourth edition 2011. P 1-2; 33
- [16] Mohsen Attaran, Sharmin Attaran, (2007) "Collaborative supply chain management: The most promising practice for building efficient and sustainable supply chains", Business Process Management Journal, Vol. 13 Issue: 3, p.390-404 <https://doi.org/10.1108/14637150710752308>
- [17] P.Candance, Deans University of Richmond, USA: E-commerce and M-Commerce Technologies - IRM Press 2005 (Publisher of innovative scholarly and professional

- information technology titles in the cyber age). United States of America 701 E. Cholocate Avenue, Suite 200. P 5-6
- [18] Robert O. Keohane and Joseph S. Nye, Jr, Globalization: What's New? What's Not? (And So What?).Source: Foreign Policy, No. 118 (Spring, 2000), pp. 104-119
<https://doi.org/10.2307/1149673>
- [19] Theodore Levitt, The Globalization of Markets, 1983, <https://hbr.org/1983/05/the-globalization-of-markets> [Accessed: 21 February 2019]
- [20] Tony Wild, Best Practice in Inventory Management, Third Edition, Routledge (2008) <https://doi.org/10.4324/9780080494050>

Comparative Analysis of Global Supply Chain Management of Chinese and USA HI-TECH Electronic companies and Its Implications

Alfonz Antoni

Associate Professor
Metropolitan University

Zhang Yuyi

Former Student of Metropolitan University

Abstract

With the rapid development of information science and technology and the continuous advance of economic globalization, the international market competition is becoming increasingly fierce. Faced with the increasingly complex global market competition, multinational corporations, in order to continuously enhance their competitiveness, improve customer satisfaction and maximize profits, take the global market as the background, take product research and development, raw material procurement, manufacturing and processing as well as final product distribution into account, so as to realize the global design of supply chain network, form a global supply chain, and establish a global supply chain management strategy. At present, under the sweeping tide of economic globalization, global supply chain management will become the mainstream trend of management development of multinational corporations in the future.

In this context, this paper makes an in-depth study of global supply chain and its management, and makes a detailed analysis of Dell's and Lenovo's global supply chain management, which are typical multinational enterprises that have established effective global supply chain management. Through the research and case analysis, this paper aims to have a comprehensive and profound understanding of global supply chain and its management, to have a critical understanding of Dell's and Lenovo's effective global supply chain management and understand their strengths and challenges, and finally to provide practical suggestions for the development of Chinese enterprises in domestic and international markets.

Finally, the following findings are obtained in this paper. With its global supply chain management, Dell has reduced costs and built good relationships with suppliers and customers. Lenovo has also adopted effective global supply chain management modes, which enable Lenovo to achieve the competitive advantages of information integration and costs reduction as well as the competitive advantages in the mode of operation and management technology. However, in the domestic

and international environments, there are still some problems in Dell's and Lenovo's global supply chain management, which presents them with some challenges. Through the comparison between the two, this paper finds that they have both similarities and differences in global supply chain management, as well as successes and shortcomings. Therefore, this paper believes that, for Chinese companies, in order to have a foothold in the world, they must learn from the common successes of Dell and Lenovo, focusing on customer demand and product value added as well as minimizing costs. In addition, Chinese enterprises must learn from Lenovo and Dell respectively when exploring domestic and international markets, learn to adapt measures to local conditions, and make full use of the advantages of the direct selling model. In addition, Chinese enterprises should also clearly recognize the problems in their own supply chain management, and actively adopt countermeasures to achieve the overall optimization of their own supply chain management.

Keywords: *global supply chains, supply chain managements, multinational companies*

1. Introduction

With the rapid development of information science and technology and the continuous advance of economic globalization, the international market competition is becoming increasingly fierce. Faced with the increasingly complex global market competition, multinational corporations, in order to continuously enhance their competitiveness, improve customer satisfaction and maximize profits, take the global market as the background, and take product research and development, raw material procurement, manufacturing and processing as well as final product distribution into account, so as to realize the global design of supply chain network, form a global supply chain, and establish a global supply chain management strategy. At present, under the sweeping tide of economic globalization, global supply chain management will become the mainstream trend of management development of multinational corporations in the future. In this context, making an in-depth study of global supply chain and its management, and a case analysis of multinational enterprises which have established effective global supply chain management can bring inspirations to Chinese enterprises and provide practical countermeasures for them to expand domestic and international markets.

This paper is mainly divided into eight chapters. The first part is a general introduction to the whole paper. The second part is the application analysis of Dell's global supply chain management. In this part, this paper first briefly introduces Dell, then analyses Dell's global supply chain management modes, the features and advantages of its global supply chain, and finally analyses the problems and challenges in Dell's global supply chain management. The third part is the application analysis of Lenovo's global supply chain management. In this part, the paper first briefly introduces Lenovo, then analyses Lenovo's global supply chain management modes, the features and advantages of its global supply chain, and finally

analyses the problems and challenges in Lenovo's global supply chain management. The fourth part is a comparative analysis of Dell's and Lenovo's global supply chain management, and its implications for Chinese enterprises.

2. The Application Analysis of Global Supply Chain Management at Dell

The Introduction to Dell

Dell is a computer technology company which is multinational from the United States. It is headquartered in Austin, Texas. Dell has been a pioneer and leader in the field of e-commerce since it was founded in 1984. It has long been known in the industry for manufacturing, designing, and selling office and home computers. At the same time, it dabbles in the computer market which is high-end, manufacturing and selling data storage devices, servers, networking equipment, etc. Dell is also known for its own innovations in the aspects including e-commerce and supply chain management, especially its direct sales mode and its production mode which is configure-to-order or build-to-order, which provide customers with personal computers that meet their own requirements¹. Until 2014, Dell was No. 51 on the Fortune 500². By 2015, Dell was the third-largest PC vendor in the world, rank only second to Lenovo and HP³. Dell is the world's largest computer monitor shipper⁴. Dell is the sixth-largest company in Texas in terms of revenue, according to Fortune magazine⁵. It is also the second-largest non-oil company in Texas after AT&T⁶.

Dell operates a wide variety of products, including the following types: desktop computer (domestic use: Dimension; for business: OptiPlex), laptop (domestic use: Inspiron; for business: latitude), servers (Power Edge series and Dell/EMC series), memorizer (Power vault); interchanger (Power connect), printer (Dell xxx), PDA (Axim series), and projector (Dell xxx MP).

The Global Supply Chain Management Mode of Dell

Dell's global supply chain management mainly includes the following three modes.

¹ What You Don't Know About Dell. Bloomberg BusinessWeek.

http://www.businessweek.com/magazine/content/03_44/b3856001_mz001.htm, download: 2019. 04. 02.

² Dell – Fortune 500 2013 – Fortune. Fortune.

<https://money.cnn.com/magazines/fortune/fortune500/2013/snapshots/1053.html>, download: 2019. 04. 02.

³ Gartner Says Worldwide PC Shipments Declined 8.3 Percent in Fourth Quarter of 2015. <https://www.gartner.com/en>, download: 2019. 04. 02.

⁴ Dell Sees Solid Year-Over-Year Growth in Worldwide PC Monitor Market in Second Quarter of 2017, According to IDC. International Data Corporation. September 18, 2017.

⁵ Fortune 500. CNN. <https://money.cnn.com/magazines/fortune/fortune500/2011/states/TX.html>, download: 2019. 04. 02.

⁶ Fortune 500 2010: States: Texas Companies. CNN.

<https://money.cnn.com/magazines/fortune/fortune500/2010/states/TX.html>, download: 2019. 04. 02.

The first one is personalized product customization mode²¹. Dell adopts the B2C mode in its sales process. It directly sells online to customers, omitting the middleman link. Dell uses the Internet to get the customers' needs in the first place, and then provides the corresponding products and services according to the customers' needs. For example, customers can choose the accessories they need to assemble their computers online according to their preferences. They can even specify delivery and payment methods.

The second one is vendor managed inventory mode²¹. Dell adopts vendor managed inventory, namely VMI. Sharing information and sign long-term agreements with its own suppliers, Dell requires the suppliers supply in accordance with its production plan. The mode at this stage is B2B mode. Dell transmits and exchanges the transaction data with its suppliers through the internet. That is why Dell could successfully achieve information instead of inventory management. Therefore, Dell's spare parts inventory cycle is much lower than the average of the industry which is about 30~40 days, and it can stay within 4 days all the time. As a result, Dell avoids the devaluation which is caused by the rapid renewal of parts and finished products in the industry.

The last one is direct selling mode⁷. Through direct selling, Dell removes the middleman link and sells computers directly to users at factory prices. Compared with competitors in the same industry, Dell has a strong price advantage. However, HP, IBM and other brands still use the traditional way of relying on agents to sell, which usually increases the price by about 7%-9%. At the same time, the storage cost and capital occupancy cost in distribution channels will also increase. More importantly, they will face the risk of price reduction of spare parts. The final prices are much higher than that when they leave the factory, thus losing the price advantage.

The Characteristics and Advantages of Dell's Global Supply Chain Management

Dell's global supply chain management has its own characteristics and advantages.

First, Dell strictly selects suppliers, builds virtual combination with suppliers, and establishes partnerships with them⁸. Dell has a complete system to select and certificate suppliers. The main criterion for supplier evaluation is whether the supplier can continuously provide products without flaws. The object of assessment includes not only products, but also the whole process of production, in other words, suppliers are required to have a system which controls quality and meets the standards. To become Dell's suppliers, enterprises must prove that they have comprehensive comparative advantages in four aspects: technology, cost,

⁷ HUANG, T.: Research on Supply Chain Management Mode of Dell. MODERN SOE RESEARCH. 2016 (16), p. 71.

⁸ WANG, X. H.: Supply Chain Management for Mass Customization: A Case Study Based on Dell. Economy and Management. 2007 (7), p.42-46.

service and sustained supply capacity. Particularly, the suppliers must have a stable supply capacity over the long term in case supply instability adversely affects Dell's commitment to final users. When assessing suppliers, Dell adopts the method of safe mass production. According to the results of supplier evaluation, Dell escalates the purchasing scale of its products in stages to lower risks of unstable supply capacity of newly selected enterprises. Building virtual combination with suppliers is a kind of new mode different from traditional management. It breaks through the limitation of the organization and only retains the most important functions. These functions can represent well the characteristics of enterprises. In terms of the comparative advantage theory and the principle of core competitiveness, the non-core business of the organization is outsourced to the professional enterprises that are good at these functions. Due to the customers' demands will change at any time, the product parts production must follow the market closely. If Dell manufactures these parts itself, it will bring a great cost pressure for Dell on capital and technology investment as well as R&D. Furthermore, other suppliers are more professional than Dell. So, Dell outsources the product parts production to those powerful large suppliers. Dell and those suppliers form alliances mutually to better meet its customers' demand.

Second, Dell's inventory management is very efficient, which refers to low inventory of materials and zero inventory of finished products²². In the aspect of inventory quantity management, Dell's low materials inventory and finished products zero inventory are very famous. The average materials inventory is about only 5 days. Within the industry, the toughest competitor for Dell still has the inventory of over 10 days, and the average inventory within the industry of other enterprises is about 50 days. Owing to the material cost will depreciate by 1% every week, inventory cycle time greatly influences product costs. Low inventory alone makes Dell products have the price advantage of over 8% than other enterprises. Sales orders are transferred to the suppliers' public warehouses through Dell's data center and then the global partner of Dell will manage them. The global partner of Dell refers to Burlington which is a third-party logistics service provider. Burlington, on the other hand, can get the goods ready within an hour after receiving Dell's list and deliver them within 20 minutes. The inventory management of Dell is not just focused on "low". By managing its own supply chain bilaterally, Dell comprehensively considers users' demand and the supply capacity of suppliers, so as to achieve the better balance between the former and the latter, and further achieve the dynamic balance of inventory, which is the final objectives of the inventory management of Dell⁹.

Thirdly, Dell's customer relationship management is very effective²². Dell is able to quickly and accurately obtain customers' individual needs through one-to-one marketing to key

⁹ ZHANG, S. G.: Dell Empire-Direct and Low Price Made Powerful Dell. Beijing, China Commercial Publishing House, 2004. p. 51.

customers. In the mass customization mode, there is a coordinated and interactive relationship between enterprises and customers, which goes beyond the connotation that enterprises usually collect information and meet customer needs. The relationship between manufacturers and customers is not the traditional relationship of supply-demand any more. Manufacturing enterprises no longer proactively provide products or services to achieve the satisfaction and loyalty of customers. Consumers are no longer traditional passive goods recipients. Customer relationship management (CRM) requires production companies interact well and integrate with their customers. When customers have identified their demand with Dell's help, the salesperson will provide them with the products they need according to the customers' requirements. After the sale of products, the understanding of customers is not over. Salesmen will also establish information files of customers via Internet, telephone, or face-to-face communication, carry out quality tracking services, and continue to explore the new needs of customers. In the point view of Dell, have a good understanding of its customers is very important. In order to ensure customers, have a good consumer experience companies should be on the basis of the perspective of customers to develop new products, tailored for customers, finally achieving interactive effect.

The Problems and Challenges in Dell's Global Supply Chain Management

Although Dell's global supply chain management mode has many unique advantages, which makes Dell occupy a large market share worldwide and become one of the most successful computer enterprises in the world, it is undeniable that Dell's global supply chain management mode has faced various challenges in its own development process, and the problems of the management mode have been constantly exposed.

First, Dell's direct selling mode has its own inherent defects. The advantages of the direct selling mode are obvious, but everything is two-sided; the direct selling mode itself has inevitable defects. For the first place, the cost which is saved by the direct selling mode is actually the profit of the channel merchants in the distribution mode. That will cause the resistance of intermediary channel merchants. In the context of the dominant distribution mode in the current market, Dell adopting direct marketing mode will undoubtedly offend intermediaries. This contradiction is becoming more and more prominent in some developing countries. For example, in China, the market mechanisms are imperfect, so distribution mode cannot be replaced completely by the direct selling mode. In China's vast county-level regions and rural markets, Dell's direct marketing mode is impossible to work. Secondly, the efficiency of direct selling depends on the perfect online trading system, credit card system, logistics system, as well as all facilities and systems conducive to flat and efficient management. These are not problems in the general developed countries, such as the United States. However, in some countries where such infrastructure construction is not yet complete, such as China, it is easy to occur such phenomena as delayed delivery and

increased logistics transportation time, which will lead to undetectable cost increases, squeeze the cost savings brought by the direct marketing mode to a certain extent, and make the cost advantages of direct marketing weaken.

Second, the transformation of Dell's sales mode brings cost pressure to Dell. The magic weapon of Dell's success is to make full use of the cost advantages brought by direct marketing. However, in the process of its globalized development, in order to open up more markets, Dell has to transform its own sales mode. For example, because of the imperfect infrastructure in all aspects of the Chinese market, the advantages of direct marketing cannot be fully reflected. In order to open up the Chinese market, Dell adopts the traditional distribution mode, but this will inevitably lead to a rapid increase in costs and bring great pressure to Dell. With the strangeness of channel management, Dell will lose its competitive advantage which is the most important advantage for Dell.

Thirdly, Dell faces a saturated market and increased competition. As the price of IT products drops sharply, IT products market, particularly personal computers market, has become saturated little by little, and the whole industry has entered an era of low profit¹⁰. In this case, the development and in-depth excavation of new markets are particularly important. In some developing countries, such as China, the development and deep excavation of new markets are usually done by distributors. But for Dell, its early direct selling mode directly damages the interests of distributors, and there is a long-standing interest resentment between distributors and Dell, which makes distributors reluctant to sell Dell's products. This partly makes it difficult for the products of Dell to enter the local market.

Fourthly, Dell's rapid expansion has created loopholes in its internal management. Dell's rapid expansion has gradually exposed the loopholes in its internal management system, so Dell cannot keep up with the pace of market expansion. For example, Dell's services are often complained by users, there are loopholes in the management of call centers, and internal staff turnover rate is high. In 2005, Dell received 1,533 consumer complaints¹¹. In 2006, Dell acknowledged problems with its customer service, including call transfers of over 45% of calls and long wait times¹². Although these problems will not cause serious consequences in a short time, if they are ignored for a long time, they will cause more customers' dissatisfaction, further adversely affect the loyalty of customers to the company, and ultimately adversely affect the company's performance.

¹⁰ ZHANG, C.: Dell's Existing Problems and Development Strategy. *Journal of Hubei College of Finance and Economics*. 2009 (3). p. 14.

¹¹ LEE, L.: It's Dell vs. the Dell Way. *Business Week*. 2006. p. 18.

¹² Dell Spiffs Up Its Service. *Business Week*. 2006.

Finally, Dell's R&D investment is insufficient, making it gradually lose the advantage of leading technology. Dell's investment in R&D is low, and the major objective of R&D is cost reduction. The investment of Dell on R&D is not more than 1% of its sales revenue, which is far below the average level of 5% to 6% of its competitors. In 2006, Dell spent \$455 million on R&D, while HP spent \$4 billion²⁴. In essence, Dell is more like a sales-oriented company, which makes profits in the way of sales model's innovation as well as sales management. This mode is more effective in the situation in which the market is not saturated and the competition aims at more market share. However, with the saturation of the market and the trend of competition for new products and technologies, Dell seems to be lacking in stamina, which is also the core difficulty faced by Dell's global supply chain management.

3. The Application Analysis of Global Supply Chain Management at Lenovo

The Introduction to Lenovo

Lenovo Group Ltd., commonly abbreviated as Lenovo, is a multinational technology company. Its headquarters are located in Beijing, China and Morrisville, North Carolina, USA¹³. Since 1996, Lenovo has been the top seller of computers in China's domestic market. In 2005, Lenovo acquired IBM PC (Personal computer) business unit. In 2013, the computer sales of Lenovo rose to number one in the world and Lenovo became the largest PC manufacturer in the world. In October 2014, Lenovo announced that it had completed the acquisition of Motorola Mobility. As a leader in the global computer market, Lenovo develops, manufactures and sells reliable, safe and easy-to-use technology products and high-quality professional services to help customers and partners around the world succeed. Lenovo mainly produces desktop computers, laptops, servers, smart TVs, printers, PDA, motherboards, all-in-one computers, mobile phones, etc. By 2018, Lenovo had reached \$45 billion in revenue and \$28 billion in total assets¹⁴, having 54,000 employees¹⁵ and three subsidiaries, including Motorola Mobility, ZUK Mobile, and Medion¹⁶.

The corporate culture of Lenovo is different from other companies from China. It is operated as a private enterprise with little interference from the government, although it was founded with an investment from the Chinese Academy of Sciences which is a state-owned research

¹³ Our Company. About Lenovo. <https://www.lenovo.com/maintenance/500page.html>, download: 2019. 04. 02.

¹⁴ Financial Statements for Lenovo Group Limited. Lenovo. <https://investor.lenovo.com/en/global/home.php>, download: 2019. 04. 02.

¹⁵ Burcu Noyan: Lenovo Group. Fortune. <http://fortune.com/global500/lenovo-group/>, issued: July 2015, download: 2019. 04. 02.

¹⁶ Roger Cheng: It's official: Motorola Mobility now belongs to Lenovo – CNET. <https://www.cnet.com/news/lenovo-closes-acquisition-of-motorola-mobility-from-google/>, issued: October 2014, download: 2019. 04. 02.

institution. Many of Lenovo's senior executives come from abroad. Two foreigners have previously served as Lenovo's CEO¹⁷.

The Global Supply Chain Management Mode of Lenovo

By implementing global supply chain management, adopting ERP system and efficient supply chain system, and using flexible automated production lines, automated storage equipment, and other facilities, Lenovo brings various links into its own management, such as purchasing, producing, distributing, and use service, and manages these links within its own supply chain so as to optimize the cost and efficiency of the entire supply chain. Lenovo's global supply chain management mainly includes the following three modes.

The first one is Lenovo's VMI warehouse model. Since Lenovo implemented its own global SCM, it has enhanced its communication with the suppliers in the aspect of information, made many efforts to eliminate information gradient with them, and established VMI (vendor managed inventory)¹⁸. VMI mode is beyond the traditional mode in which there is only cooperation among enterprises in isolation. Formerly, Lenovo's two-week inventory led suppliers to stock some materials in advance to replenish the goods in time, and the cost of the inventory will be passed on to Lenovo by suppliers through raising the material price. Now Lenovo builds a VMI dynamic warehouse which is located in the factories of suppliers, and the supplier is responsible for the material in the warehouse. Lenovo only builds a transit warehouse belonging to itself. Lenovo picks up goods at VMI warehouse whenever necessary, so as to ensure that Lenovo does not suffer from product delays as a result of insufficient supply in the upstream. In terms of the warehouse management of VMI, Lenovo and its major suppliers conduct data exchange twice a day so as to reduce the errors between actual demand and the level of inventory. Both sides monitor the stock status in the warehouse by managing visually inventory. If the suppliers find that the material in the VMI warehouse is going to be run out, they will replenish within the shortest time. The VMI model has reduced Lenovo's inventory from 14 days to 5 days at the time of order production. The key to the success of VMI mode lies in eliminating the information fence between enterprises and minimizing the information gradient, which makes the inventory level in VMI warehouse beneficial to both sides. For suppliers, they can reduce the material backlog inventory costs caused by insufficient knowledge of Lenovo demand. For Lenovo, the reduction of inventory costs of suppliers will inevitably reduce procurement costs. The replacement rate of parts in PC industry is very high, and its monthly depreciation rate is about 2%. The establishment

¹⁷ From guard shack to global giant; Chinese industry. *The Economist*.
<https://www.economist.com/news/business/21569398-how-did-lenovo-become-worlds-biggest-computer-company-guard-shack-global-giant?fsrc=rss>, issued: January 2013, download: 2019. 04. 02.

¹⁸ LI, B.: *Theoretical Analysis of Lenovo's Supply Chain Management*. China Business & Trade. 2011(9). p.202-203.

of VMI warehouse reduces Lenovo's risk in the procurement process. Constructing the whole model reflects the win-win concept of supply chain

The second one is electronic bidding mode. After the successful introduction of ERP, the production process tends to be controlled by electronic information. Lenovo relies on electronic procurement in the procurement process³². First, according to the mode of material purchasing, order is placed through the e-commerce website. After the comprehensive system processing, the order becomes the corresponding number of parts which are required. Next, Lenovo searches for the data in the ERP system to check if the inventory meets the production. If the integrated plan can be implemented, the system will order production from the manufacturing system and feedback the delivery date to the customers; if the material is insufficient or part of the material is missing, the integrated planning system will generate purchase orders and ask Lenovo's suppliers for goods through the procurement coordination website.

The third one is Lenovo's gold supply chain. Through the construction of VMI, CTO (customization), electronic bidding and the exploration of Lenovo's dual business operation mode, Lenovo has built a "gold supply chain" for itself, which is admired by other enterprises³². The optimization of CTO process not only meets the different needs of customers, but also improves the customers' delivery ability to buy customized products. The electronic bidding procurement mode makes full use of the business opportunities brought by the Internet to enterprises, and greatly reduces the procurement cost of Lenovo. Under the system integration of Lenovo's end-to-end dual business model, Lenovo has established a network of logistics with three factories in Beijing, Shenzhen, and Shanghai as the center, covering 39 distribution centers in large and medium-sized cities throughout the country. After the supply chain optimization from 2000 to 2004, Lenovo has created a more efficient gold supply chain in the Chinese market than Dell's agile supply chain. Its corresponding speed and cost control have surpassed that of Dell. In China, the cost of Lenovo is just around a quarter of that of Dell, and its corresponding time is only 4 days (Dell needs about 1 week)¹⁹. This supply chain has laid the foundation for Lenovo to gain momentum in the Chinese market.

The Characteristics and Advantages of Lenovo's Global Supply Chain Management

The most prominent feature of Lenovo's global supply chain management is combining push and pull SCM to implement a dual business operation model driven by product plus sales. Lenovo divides customers into relational customers and transactional customers through

¹⁹ LIU, W. F.: The Core Competence of Enterprises from the Perspective of Supply Chain Management. *Management & Technology of SME*. 2008 (11), p. 55.

push and pull operation modes, and then adopts different supply chain management modes according to different types of customers, giving full play to their own advantages. The advantages of Lenovo's global supply chain management are mainly reflected in the following four aspects.

First, Lenovo's global supply chain management has the competitive advantage of information integration. Lenovo's global supply chain management minimizes the information cost of its entire supply chain, and its management goal has become the information management of the whole supply chain integration. In the course of operation, a closely related information network will eventually be formed which integrates the whole supply chain and having an information interest group that integrates dispersed information in the market, Lenovo can improve its market competitiveness and participate in a higher level and more comprehensive market competition.

Second, Lenovo's global supply chain management has a competitive advantage in the way it operates. Through obtained information Lenovo organizes production and operation according to the actual needs of consumers, making Lenovo's operation mode shift from speculative demand to actual demand. As long as customers have requirements, Lenovo must wholeheartedly meet their requirements. Therefore, Lenovo can directly meet the customers' requirements for product personalization. In this way, using the supply chain network, Lenovo can communicate with customers in time, and can grasp the demand information of consumers in time, so as to it can adapt to rapid and changeable demand changes.

Thirdly, Lenovo's global supply chain management has the competitive advantage of reducing costs. Through global supply chain management, Lenovo has changed the traditional concept of inventory and come up with a new inventory concept. Through VMI and other new inventory management technologies, methods and concepts, Lenovo's zero inventory management can be realized, thus greatly reducing some duplicate resource costs, and then greatly reducing the management cost of the entire supply chain.

Fourthly, Lenovo's global supply chain management has the competitive advantage in management technology. Lenovo's global supply chain management has made the traditional business operation mode change. Through the application of modern information technology, such as logistics bar code technology, commodity bar code technology, electronic ordering system (EOS), vendor managed inventory (VMI), and quick response services (QRS), it has improved the accuracy and rapidity of business processing, reduced staff, simplified the operation process and improved efficiency.

The Problems and Challenges in Lenovo's Global Supply Chain Management

Lenovo began to integrate its global supply chain after acquiring IBM personal PC in 2004. However, over the past few years, Lenovo's dual mode replication has not been successful enough. Lenovo's push and pull SCM are facing challenges in the international environment.

First, Lenovo's push SCM suffers from channel blockage. Push supply chain management operation mode refers to the one which is around manufacturers and in which the products are gradually promoted from distributors to customers after production. Push mode corresponds to Lenovo's previous transactional customer business model. It is impossible for this supply chain to grasp the market demand accurately as it does when facing enterprises directly. It needs to forecast the market and strengthen the management of channel inventory.

Push supply chain requires produce in advance. If the market forecast is not accurate, it will cause higher inventory costs. In the adjustment of Lenovo's business, Lenovo subdivides the original seven regions into 18 sub-regions. At the same time, it makes the organizational structure flat enough. By doing this, the information flow is shortened and the make the information gradient less influence the loss of information.

Managing push supply chain should attach importance to accurately grasping market demand information, making the forecast data of orders and accessories more accurate and the adjustment frequency more intensive, so as to make the products manufactured by enterprises can meet market demand without the shortage of supply caused by the shortage of goods.

PC business operates in two different channel modes at home and abroad. In the market domestically, it is mainly a manufacturer-driven mode, in other words, Lenovo brand influences all of the links within the supply chain, drives distribution and drives retail sales. In the channel mode internationally, the terminal is the most important, that is, consumers decide the demand of the whole market. The promotion of this model certainly suffers resistance before opening up its own channels abroad²⁰.

Secondly, Lenovo's pull SCM lacks agility. Pull-type supply chain management operation mode refers to the one which takes the end-user as the driving source. The whole supply chain has high integration density and quick exchange of information. With this supply chain, customized services could be achieved in accordance with users' needs. The pull-type supply chain of Lenovo, in fact, mirrors the relational customer operation mode in Dell's direct selling mode, and implements tailor-made service mode for end customers.

²⁰ LI, B.: Analysis of Lenovo's Global Supply Chain Management. Productivity Research. 2011 (9). p.171.

Pull-type supply chain directly face customers' personalized demand, so the enterprise's various links face higher requirements. It requires enterprises not just to digest and absorb the features of market demand, but also to synchronously improve their R&D capability and development capability of new products, etc. Otherwise, in the face of the increasingly diversified demand in the PC industry, enterprises will be difficult to cope with, resulting in customer churn, the decline of customer satisfaction, etc.

In the pull-type supply chain, customers include domestic customers and foreign customers. At the international level, the diversification of demand for Lenovo production line design put forward more stringent requirements. For mature markets, such as the markets in the United States and Europe, consumers' choices of PC are more rational and their requirements for functions are more diversified. A wider customer base has put forward higher requirements for Lenovo's production, and the requirements for the cohesion of each link have been improved accordingly. Lenovo's product delivery routes are much longer in overseas market than in domestic market, and the length of transport routes in pull supply chain affects delivery speed. Lenovo's long delivery routes affect the agile supply to customers. After getting into the market internationally, Lenovo is confronted with challenges in balancing the cost of logistics with on-time delivery³⁴.

4. The Comparative Analysis of Global Supply Chain Management between Dell and Lenovo and Its Implications

The Comparative Analysis of Global Supply Chain Management between Dell and Lenovo

Through the above elaboration of Dell's and Lenovo's global supply chain management, we can summarize the two companies' global supply chain management modes up as integrated supply chain management and seamless supply chain management. The former is based on the construction of direct marketing channels in the downstream of the supply chain, crosses the enterprise's own boundaries in the upstream of the supply chain, implements virtual management on the basis of demand information, brings parts suppliers and complete machine suppliers into Dell's management system, and fulfils its functions in accordance with Dell's instructions. The latter takes demand forecasting as a link. Through the demand forecasting model and the fast adjustment mechanism when the forecast deviates, and with the aid of supply coordination and distribution coordination, it achieves the seamless transmission of information with supply collaboration and distribution collaboration, so as to

meet the differentiated and diversified demand of customers²¹. The differences between them are mainly reflected in the following aspects.

First of all, Dell's direct selling mode enables Dell to forecast directly the demand of downstream end customers and share the demand information with its supplier in the upstream by the supplier participating in inventory plan, which makes the whole supply chain ready to meet the expected demand, thus realizing virtual integration and integrated operation. In contrast, in its global supply chain management, Lenovo is faced with the complex tasks of opening up the international market, establishing a global supply chain and realizing the transnational integration of supply chain after the acquisition of IBM. This makes Lenovo unable to align with the advantages of external resources to improve the quality of its products like Dell. At the same time, the degree of Lenovo's information sharing with suppliers and channels is also affected by the integration process. For example, after acquiring IBM and doing overseas business, Lenovo's domestic business and overseas business belong to two management systems. The core resource demand plan in the supply chain can only be adjusted in the international system once a week, while it is adjusted in the domestic system twice a day. In the original IBM PC system, customer return information is fed back to the back end through the IT system often in a week or two weeks²². However, it cannot be denied that Lenovo pays more attention to the integration of channel management and supply chain management. Its understanding of demand has gradually changed from the demand response stage to the demand impact and lead stage. Dell's make-to-order operation process, which receives orders through website and telephone and constantly adjusts its production plans according to market changes, is still in the stage of rapid and accurate passive response to requirements²³.

Secondly, Dell's logistics management has obvious advantages. Dell has been focusing on the reduction of cost and the establishment of time advantage. Dell has six factories worldwide, including Penang in Malaysia and Xiamen in China. It centralized orders from over 200 suppliers to 50 of them, but only if they build warehouses next to Dell's factories and delivery to the nearest, and eliminated the suppliers which were reluctant to do that from the supply chain. Dell's own spare parts inventory time is less than 2 hours. Once Dell receives the order, it will notify the supplier to send the spare parts. It takes just 4 hours from the feedstock to the assembly and delivery. In the procurement logistics, Lenovo's implementation of customer demand design procedures has been significantly improved. In

²¹ GAO, J. J. et al.: Analysis and Comparison of Innovated Demand China Management Modes in Computer Industry. *Logistics Technology*. 2012 (1). p. 114-115.

²² FENG, Y. D.: Lenovo Supply Chain Integration: The Most Complex Questions and Answers. *Business Week*. 2007 (20). p. 85-87.

²³ WANG, Y. M.: Virtual Integration of Supply Chain Enterprises from Dell's Business Model. *China Business & Trade*. 2010 (14). p. 48-49.

terms of finished goods logistics management, Lenovo began to search for suitable transport providers through electronic bidding in 2009. It uses Ariba's electronic bidding tool, invites logistics suppliers to conduct online real-time bidding, and determines partners according to service price and quality. But Lenovo's manufacturing base needs to purchase raw materials and spare parts globally with more than 300 suppliers, which leads to the inevitable hoarding of original parts in Lenovo's production. At the same time, in order to meet the demand of the market in the downstream sales channels, a lot of inventories are needed to support sales at all sales points, resulting in difficulties in inventory and cost reduction.

Thirdly, the cost control of sales channels is the key link for the two computer enterprises to build their core competitive advantage. The direct marketing mode has become the common development direction for them to reduce the cost. Dell's direct marketing model completely cancels the distribution link, directly contacts customers in a way of direct selling to reduce costs and improve service quality, and is not restricted by distribution channels in terms of capital return, thus establishing its own competitive advantage. Lenovo has also launched its own direct marketing channels to gain this competitive advantage, but it strives to make full use of its old channels while developing direct marketing channels. By adopting the way of joint construction of entity retail channel, distribution terminal and service terminal, and building harmonious channel relationship, Lenovo increases trust among channel subjects to avoid the increase of channel cost.

Finally, in terms of product appreciation, there are no large-scale value-added programs in the computer industry. Lenovo and Dell have both made some explorations in terms of product appreciation. Dell products are positioned at same benefits for less price, and its efforts to increase product value are more reflected in the choice of suppliers. Companies with strong R&D capabilities, manufacturing capabilities, financial capabilities, quality and cost control capabilities, and flexible supply capabilities are likely to become Dell's suppliers. Dell usually also expects suppliers to have a wide range of customers. Dell believes that if a supplier only serves for Dell, its vision is often not wide enough to keep close contact with the market. If a supplier serves for Dell and other companies, such as HP, Apple and IBM, its products are guaranteed²⁴. Lenovo increases customer value through customization. Customers can configure automatically according to their own choices. The system can offer quotation automatically, so that customers can choose products online, and can get real-time price and delivery time.

²⁴ HAN, R.: Dell's Global Supply Chain Management. *China Logistics & Purchasing*, 2005 (2). p. 68-70.

The Implications of the Case Analysis for Chinese Enterprises

Through the comparative analysis of Dell's and Lenovo's global supply chain management, we can find that, first of all, Dell's and Lenovo's global supply chain management have both similarities and differences. Secondly, although Dell's and Lenovo's global supply chain management have differences, they have taken certain market shares and achieved their own development with their own global supply chain management. Thirdly, Dell and Lenovo have regional differences in their respective successes with global supply chain management. Therefore, this paper believes that Chinese enterprises can get the following inspirations.

Firstly, Chinese enterprises should learn from their common successes, that is, to focus on customer needs, to reduce costs as much as possible, and to focus on product appreciation. Firstly, Chinese enterprises should attach importance to customer needs. On the one hand, they should make full use of the Internet and related information systems to better understand the real needs of customers, and provide customers with products that keep them satisfied. On the other hand, they should improve their own services to match their products, so as to avoid customer dissatisfaction or even loss due to service defects. Secondly, Chinese enterprises should strive to establish a more perfect global supply chain management, optimize all links of the supply chain, reduce their operating costs as much as possible, and provide consumers with products with higher cost performance. Finally, Chinese enterprises should make continuous improvements in products and services, realize the added value of products, and then achieve their own sustainable development.

Secondly, when developing domestic market, Chinese enterprises should learn from Lenovo and adapt to local conditions. That is to say, Chinese enterprises should take into account the reality of the domestic market when developing the domestic market. For example, in the Chinese market, the intermediary channel merchants shoulder the responsibility of opening up and digging new markets in depth. Moreover, the various market mechanisms are not perfect enough. In addition, the sales mode in the vast county-level regions and rural markets is not mature enough. Therefore, in China, the direct marketing mode cannot completely replace the distribution mode. Moreover, the incomplete infrastructure will bring hidden cost increase to the direct selling mode. Therefore, when developing domestic market, Chinese enterprises should take into account the two modes of direct selling and distribution, make full use of their advantages, and minimize the negative impact of their disadvantages on their own development.

Finally, Chinese enterprises should learn from Dell and make full use of the advantages of direct selling mode when developing international markets, especially in developed countries with relatively perfect market mechanisms such as European and American countries. Specifically, Chinese enterprises should integrate suppliers and customers effectively like

Dell, to improve their operational efficiency. Chinese enterprises should also simplify and optimize the supply chain process like Dell, speed up information feedback, strengthen their own inventory management capabilities and their collaboration with suppliers. In addition, Chinese enterprises should strive like Dell to establish good relations with customers, do a good job in customer relationship management, maintain existing customers with better products and services, and attract more new customers.

5. Conclusion

Supply chain is a complex organizational network. It contains many links, such as manufacturers, suppliers, retailers, distributors, and customers. By controlling the flow of information, materials, and capital as well as starting from the purchase of raw materials to the sales of finished products, supply chain connects many links in the upstream and downstream into a whole. If the node enterprises in a supply chain belong to or are located in different countries, this supply chain is called global supply chain. In accordance with different criteria, global supply chain could be classified into many types. Global supply chain has the characteristics of internationality, complexity, risk and high standard. Supply chain management is to design, plan and control all links and elements of the supply chain to maximize the overall value of the supply chain. Supply chain management has gone through several stages of development. Global supply chain management has its own features, that is, taking consumers as the core, the concept of cooperation and competition as the concept, and modern network information technology as the support.

In the construction of supply chain, the application of information technology is the effective tool, the optimization of goods flow is the foundation, the adjustment of supply chain management structure is about strategy, and the maximization of the profit of enterprise supply chain is the goal. It can be said that information is the primary task of the development of enterprise supply chain. Therefore, Chinese enterprises must carry out information transformation that suits them, and widely implement the application of enterprise management consulting system, resource planning system and electronic supply chain management system. To strengthen the management of goods flow, enterprises should fully realize the control of production planning. Optimizing inventory management of the overall supply chain, reducing logistics costs, improving logistics efficiency as well as enhancing control over the core competitiveness of enterprises. What's more, enterprises can apply business outsourcing with the integration of enterprise resources for driving the development of enterprises with an overall enhanced supply chain.

As China's green supply chain management is still in its infancy, it can be said that popularizing green supply chain management in China will be a long and arduous process. In addition to introducing advanced concepts from abroad, many domestic companies are

also exploring the transformation path of their own supply chain management structure. And the direction of the solution is similar to that of foreign countries, for example, they are beginning to realize the importance of the choice of suppliers to the enterprise. However, although Chinese enterprises have taken many measures to improve management efficiency in the management process, most of them are carried out within the enterprise or within the enterprise sector, and are not considered from the perspective of the entire supply chain. Most of enterprises do not understand global supply chain management, and they do not understand the status of foreigner management. The functions of traditional logistics departments within the enterprise can no longer adapt to the current international business environment, and it is urgent to carry out reforms from the management concept.

Due to the particularity of China's socialist economic system, government policies and legal regulations will affect the cooperation of various sectors in the supply chain, which will have an impact on the supply chain management of enterprises. Officially, the government should pay attention to the improvement of the enterprise supply chain management environment. It is necessary not only to promote the improvement of industry laws and regulations, but also to strengthen the standardization of supply chain management. It is also necessary to implement the agreement of industry supply chain management to reduce the management differences between enterprises. The market should establish a supplier quality assurance system to strengthen the relationship between enterprises and suppliers. It can enable powerful suppliers to participate in the transformation of important issues of the companies and establish a strategic alliance with them to enhance their own competitiveness. While vigorously developing diversification, Chinese enterprises should do a good job evaluation of the projects, reduce the high-cost business and redundant investment of the enterprise. To concentrate the core resources of the enterprise, fully apply the business outsourcing. Especially small and medium-sized enterprises must strengthen the concept of taking the overall supply chain as the core.

As the leading enterprises in the computer industry, Dell and Lenovo have achieved their own development and growth through effective global supply chain management. Dell's global supply chain management modes mainly includes personalized product customization, vendor managed inventory and direct selling. With its global supply chain management, Dell has reduced costs and built good relationships with suppliers and customers. However, Dell's global supply chain management also has some defects, making it face a series of challenges. Lenovo has also adopted effective global supply chain management modes, including vendor managed inventory, electronic tendering mode, and dual business mode. These enable Lenovo to achieve the competitive advantages of information integration and costs reduction as well as the competitive advantages in the mode of operation and management technology. However, in the international environment, Lenovo's global supply chain management has also exposed some problems and faced many challenges. Through the comparison between

the two, we can find that they have both similarities and differences in global supply chain management, as well as successes and shortcomings. For Chinese companies, in order to have a foothold in the world, they must learn from the common successes of Dell and Lenovo, focusing on customer demand and product value added as well as minimizing costs. In addition, Chinese enterprises must learn from Lenovo and Dell respectively when exploring domestic and international markets, learn to adapt measures to local conditions, and make full use of the advantages of the direct selling model. More importantly, Chinese enterprises must clearly recognize the problems in their own supply chain management, and adopt effective countermeasures to optimize their supply chain management, so as to make themselves invincible in the domestic and international markets.

6. Bibliography

- [1] STEVENS, G.: Integrating the Supply Chain. *International Journal of Physical Distribution and Logistics Management*. 1989 (8). p. 3-8.
<https://doi.org/10.1108/EUM0000000000329>
- [2] CHRISTOPHER, M: *Logistics and Supply Chain Management*. Beijing, Beijing Publishing House. 2001. p. 13.
- [3] GANESHAN, R. & HARRISON, T: *An Introduction to Supply Chain Management*. Penn State University. http://silmaril.smeal.psu.edu/misc/supply_chian_intro.html, download: 2019. 04. 02.
- [4] CHOPRA, S. & MEINDL, P.: *Supply Chain Management: Strategy, Planning, and Operation*. New Jersey, Printice-Hall Inc. 2001. p. 3-5.
- [5] MA, S. H. et al: *Supply Chain Management*. Beijing, China Machine Press. 2000. p. 41.
- [6] Baidu Baike: Classification of Supply Chain. <https://baike.baidu.com/item/供应链/139061?fr=aladdin#6>, download: 2019. 04. 02.
- [7] WU, F. M.: Implementation of Global Supply Chain Management Informatization. *Market Weekly (Theoretical Research)*. 2012 (5). p. 38.
- [8] [http://searchcio.techtarget.com/sDefinition/\(\),sid19_gci214546,00.html](http://searchcio.techtarget.com/sDefinition/(),sid19_gci214546,00.html)
- [9] CHOPRA, S. & MEINDL, P.: *Supply Chain Management: Strategy, Planning, and Operation*. New Jersey, Printice-Hall Inc. 2001. p. 6.
- [10] MOVAHEDI, B., LAVASSANI K., & KUMAR V.: Transition to B2B e-Marketplace Enabled Supply Chain: Readiness Assessment and Success Factors. *The International Journal of Technology, Knowledge and Society*. 2009 (3). p. 75–88. <https://doi.org/10.18848/1832-3669/CGP/v05i03/55999>
- [11] HANDFIELD, R. & NICHOLS, E.: *Introduction to Supply Chain Management*. Prentice-Hall, Upper Saddle River. 1999.

- [12] People - Poole College of Management - NC State University. <https://poole.ncsu.edu/>, download: 2019. 04. 02.
- [13] Trade Services and the Supply Chain. https://www.cgi.com/sites/cgi.com/files/GTR_AcceleratingSupplyChainFinance_S tarace_Quote_e.pdf, download: 2019. 04. 02.
- [14] LAN, Q. X.: The Globalization Trend of Supply Chain Management and the Strategies to Improve the International Competitiveness of Chinese Enterprises. *Journal of Yunnan Finance & Economics University*. 2003 (4). p. 10.
- [15] What You Don't Know About Dell. *Bloomberg BusinessWeek*. http://www.businessweek.com/magazine/content/03_44/b3856001_mz001.htm, download: 2019. 04. 02.
- [16] Dell - Fortune 500 2013 - Fortune. *Fortune*. <https://money.cnn.com/magazines/fortune/fortune500/2013/snapshots/1053.html>, download: 2019. 04. 02.
- [17] Gartner Says Worldwide PC Shipments Declined 8.3 Percent in Fourth Quarter of 2015. <https://www.gartner.com/en>, download: 2019. 04. 02.
- [18] Dell Sees Solid Year-Over-Year Growth in Worldwide PC Monitor Market in Second Quarter of 2017, According to IDC. *International Data Corporation*. September 18, 2017
- [19] Fortune 500. *CNN*. <https://money.cnn.com/magazines/fortune/fortune500/2011/states/TX.html>, download: 2019. 04. 02.
- [20] Fortune 500 2010: States: Texas Companies. *CNN*. <https://money.cnn.com/magazines/fortune/fortune500/2010/states/TX.html>, download: 2019. 04. 02.
- [21] HUANG, T.: Research on Supply Chain Management Mode of Dell. *MODERN SOE RESEARCH*. 2016 (16). p. 71.
- [22] WANG, X. H.: Supply Chain Management for Mass Customization: A Case Study Based on Dell. *Economy and Management*. 2007 (7). p.42-46.
- [23] ZHANG, S. G.: Dell Empire-Direct and Low Price Made Powerful Dell. Beijing, China Commercial Publishing House. 2004. p. 51.
- [24] ZHANG, C.: Dell's Existing Problems and Development Strategy. *Journal of Hubei College of Finance and Economics*. 2009 (3). p. 14.
- [25] LEE, L.: It's Dell vs. the Dell Way. *Business Week*. 2006. p. 18.
- [26] Dell Spiffs Up Its Service. *Business Week*. 2006.
- [27] Our Company. About *Lenovo*. <https://www.lenovo.com/maintenance/500page.html>, download: 2019. 04. 02.
- [28] Financial Statements for *Lenovo Group Limited*. *Lenovo*. <https://investor.lenovo.com/en/global/home.php>, download: 2019. 04. 02.

- [29] Burcu Noyan: Lenovo Group. Fortune. <http://fortune.com/global500/lenovo-group/>, issued: July 2015, download: 2019. 04. 02.
- [30] Roger Cheng: It's official: Motorola Mobility now belongs to Lenovo – CNET. <https://www.cnet.com/news/lenovo-closes-acquisition-of-motorola-mobility-from-google/>, issued: October 2014, download: 2019. 04. 02.
- [31] From guard shack to global giant; Chinese industry. The Economist. <https://www.economist.com/news/business/21569398-how-did-lenovo-become-worlds-biggest-computer-company-guard-shack-global-giant?fsrc=rss>, issued: January 2013, download: 2019. 04. 02.
- [32] LI, B.: Theoretical Analysis of Lenovo's Supply Chain Management. China Business & Trade. 2011(9). p.202-203.
- [33] LIU, W. F.: The Core Competence of Enterprises from the Perspective of Supply Chain Management. Management & Technology of SME. 2008 (11). p. 55.
- [34] LI, B.: Analysis of Lenovo's Global Supply Chain Management. Productivity Research. 2011 (9). p.171.
- [35] GAO, J. J. et al.: Analysis and Comparison of Innovated Demand China Management Modes in Computer Industry. Logistics Technology. 2012 (1). p. 114-115.
- [36] FENG, Y. D.: Lenovo Supply Chain Integration: The Most Complex Questions and Answers. Business Week. 2007 (20). p. 85-87.
- [37] WANG, Y. M.: Virtual Integration of Supply Chain Enterprises from Dell's Business Model. China Business & Trade. 2010 (14). p. 48-49.
- [38] HAN, R.: Dell's Global Supply Chain Management. China Logistics & Purchasing. 2005 (2). p. 68-70.
- [39] WANG, S. B.: A Brief Analysis of the Current Situation of Supply Chain Management of Chinese Enterprises. Scientific and Technological Innovation. 2014 (25). p. 277.
- [40] CHEN, G. Y. & YANG, M. M. An Analysis of Supply Chain Management in China. Journal of Sun Yat-Sen University. 2003 (6). p. 78-82.

Studying the Changes Forced by Covid-19 on Small and Medium Businesses and its supply chains in the UK

Alfonz Antoni

Associate Professor
Metropolitan University

Savannah Celestina Trail

Former Student of Metropolitan University

Abstract

All over the world, Covid-19 pandemic has affected the businesses operating in different industries and sectors. Some businesses have managed to deal with the impact while some have faced severe losses. In the UK, analysts have identified that SMEs play a major role in economic growth and development. The current pandemic situation has increased pressure for the businesses, which has led to a shift in the business models. The businesses are adopting new strategies and methods to deal with the challenges and complexities. The pressure of competing and retaining positions has affected different areas and aspects of the business. Along with these changes, it has been seen that the demands of consumers have also changed. The changes in consumer behaviour have led to influence on business approaches and strategies. The study focused on gathering primary data using a questionnaire. The analysis of the data using the regression model justified that the Covid-19 pressure has imposed changes on SMEs. However, the impact of consumer behaviour in this situation has not been proved. The study concludes that it is important for the business to respond quickly according to the market trends and demands.

Keywords: *Covid-19, consumer behaviour, environmental pressure, essential and non-essential items, lockdown, disruption in supply chains*

1. Introduction

Background

In the business world, different events and situations have the potential to influence the business environment. A number of microeconomic and macroeconomic factors have been identified that influence the growth and success of the business. The changes in the beliefs

and perspectives of consumers with time have affected the strategies and approaches integrated by businesses. The history indicates that pandemic illnesses have brought long-lasting changes in the world. Different pandemic outbreaks shaped the business environment and perspectives of people in different ways around the world (Narula, 2020). Similarly, the recent Covid-19 outbreak has significantly influenced the business environment. Some businesses adopted changes in their functions, operations, and models actively. While these changes are termed as forceful as the businesses were not prepared for these changes. Most of the businesses adopted the e-commerce model to meet the changing needs of consumers. They started offering online shopping facilities to the consumers, which not only helped in managing sales and customer base but also helped in managing the profitability to some extent. Businesses need to keep track of the changes in consumer needs and desires. If they fail to bring changes in the products and services according to the changes in the consumer behaviour, it would lead to failure of the business (Accenture, 2020).

Since the beginning of 2020, the Covid-19 outbreak has gained attention. It has affected different countries around the world. People including business owners, managers, and consumers have become increasingly concerned about the impact of Covid-19 from the economic and health perspectives. It has influenced different aspects of life including education, work-life, and personal life. The people are responding to the situation in different ways. Their attitudes, behaviours, and purchasing habits have become the centre of attention these days. These changes have influenced the businesses operating in different industries and sectors to adopt strategies and approaches effectively and wisely. When the pandemic situation was identified, people panicked a lot. They started feeling anxious and panic-buying was identified. Some consumers shopped in bulk so that they have excess supplies available at home. While some consumers remained indifferent to the situation. They continued buying the usual products despite the continuous recommendations made by the government and health professionals (Webster, 2020).

As a result of Covid-19, researchers have identified changes in the behaviour, attitudes, and purchasing decisions of consumers. It is expected that these changes would remain post-pandemic. Most of the purchases are centred around basic needs. People have become more conscious of what to buy and where to buy. The pandemic situation and the lockdowns executed by countries have influenced consumers to opt for online purchasing. A shift in consumption and shopping pattern has been identified as the people are preferring the purchase of local products. They are also embracing digital commerce. It has helped them in managing isolation and social distancing (Sheth, 2020, p.285). The changes in the environment have led consumers belonging to different segments to learning and connecting using digital platforms. The pandemic has influenced the world significantly. People living in different regions and different conditions have reacted to the changes in different manners as they think and live differently. These changes have influenced the supply chains and

business models. Many small and medium businesses have adopted and integrated e-commerce models. They are offering online purchasing options to consumers through applications and websites. Researchers believe that Covid-19 has reshaped the consumer goods industry in real-time. It is also believed that the newly adopted habits would endure beyond this crisis. The shopping habits, the decisions related to how and where to shop, and the brands and products that are necessary for consumers have influenced the mindset and perceptions of customers (Santhiya & Elavarasan, 2020, p.9).

As a result of Covid-19, economic activities that involve close physical contact have been restricted by the government. Governments around the world are placing containment measures to slow down the spread rate of infection. Lockdowns and border closures have severely restricted economic activities. The businesses and consumers are choosing for social distancing to avoid potential contagion and physical proximity. In response, many businesses have adopted e-commerce business models. E-commerce has become a major pillar in the fight against Covid-19. Online shopping and online payments have helped both businesses and consumers during this situation. However, it is believed that the changes in consumer behaviour and business models are long-term. So, businesses are planning and adopting innovative strategies to deal with changing consumer behaviour to remain competitive (Donthy & Gustafsson, 2020, p.286).

Problem Statement

The Covid-19 pandemic outbreak affected lives in many ways. Many people lost their lives or their friends and family. Since the beginning of 2020, the Covid-19 outbreak has created fear. People are adopting new ways to manage their personal and professional lives. It has significantly influenced their shopping behaviour and attitude. As countries announced a lockdown, people started using online stores and shops for purchasing products. It provided many small and medium businesses with the opportunity to adopt the e-commerce model. They started providing home deliveries of a wide range of products (Narula, 2020). Some businesses adopted these changes willingly while others were forced or else it was difficult to survive in the situation. Researchers claim that changes in consumer behaviour have a significant impact on business strategies and approaches. The success of a business relies on how effectively it manages to meet the needs of consumers. The increasing competition and challenges in the business world are influencing businesses to continuously pay attention to effectiveness, innovation, and consumer demands. However, the lack of resources and different microeconomic and macroeconomic factors create challenges for businesses. Similarly, small and medium businesses faced more challenges in the Covid-19 situation. The current research intends to focus on studying the changes forced by Covid-19 on SMEs in the UK and consumer behaviour towards products (Webster, 2020).

Research Aim and Objectives

The study aims to explore the changes forced by Covid-19 on small and medium businesses in the UK and consumer behaviour towards products

The objectives are stated below:

- Studying the shift from bricks and mortar business model to e-commerce as a result of Covid-19
- Studying the shift in consumer shopping behaviour as a result of Covid-19
- Analysing the impact of forced changes on business and consumer behaviour in the long run

Research Question

How small and medium businesses are coping in Covid-19 situation to positively influence consumer behaviour?

Outline of the Research

The research report consists of six chapters, which include an introduction, literature review, Covid-19, and its impact on businesses in the UK, research methodology, results, and conclusion. The first chapter introduces the research topic and area. It includes the background, aims, and objectives of the study, problem statement, hypotheses, and research questions. The second chapter includes a review of the literature, which involves the analysis of different theories and models related to the topic. It formed the base of the study. The third chapter includes the research methodology, which includes the choices of approaches and techniques and their justifications. Chapter four presents the results based on the analysis and evaluation of the data gathered during the study, which helped in answering the research question. The last chapter concludes the study and includes a discussion of the findings. It also includes recommendations based on the findings of the study.

2. Literature Review

Introduction

Different social, political, economic, technological, environmental, and legal factors have an impact on the business environment and nature. Along with this, it has been seen that natural disasters, crisis, and other events have an impact on the business progress and strategies. The recent outbreak of Covid-19, which has hit the countries globally since the beginning of 2020

has captured the attention of researchers and analysts. The impact of Covid-19 is very prominently visible as it has not only affected personal and professional lives but has also influenced the business models, strategies, and industries to a great extent. All businesses including large, medium and small have suffered due to the pandemic situation (Accenture, 2020). The literature review has been conducted to find out the changes forced by Covid-19 on SMEs and how it has affected consumer behaviour. The review is presented in this chapter.

Bricks and Mortar Business Model and E-Commerce Model

With the advancement in technology, it has been seen that businesses have brought changes in their business model and strategies. The adoption of technology has helped in taking smarter initiatives to utilise innovative and sustainable ideas. The businesses using traditional bricks and mortar business models are achieving a competitive edge by integrating technology and systems. They are utilising technology-enriched services and facilities to enhance the service quality and offer a more personalised retail experience. It not only enhances the overall performance of the retailers but also helps in attracting and retaining customers. Digital technologies have undoubtedly augmented the shopping experience (Edwards & Strathcole, 2020). To enhance the experience of customers, the businesses are paying attention to differentiation, which is helping in achieving a competitive edge. The use of radio frequency identification (RFID) technology and the integration of smart in-store technology applications have helped retailers in managing customer experiences. Businesses these days are paying attention to capturing data related to consumer behaviour and purchasing decisions, which helps in developing and enhancing strategies and processes. These changes and developments not only help businesses in retaining customers but also helps in enhancing customer level services, which leads to customer loyalty and satisfaction (Bacaj, 2019).

According to Retail Week (2020), advanced and innovative in-store technologies have influenced the retail settings of the brick-and-mortar businesses. The concept of smart shopping has emerged, which has led to the development of novel challenges and complexities. Researchers have identified that the Internet of Things technologies has become an essential part of the retail industry. The smart shopping carts, smart mirror interactive technology, augmented reality, smart kiosks, interactive displays, smart kiosks are some of the examples of in-store smart technologies. The smart applications have helped in the development of smart shelves, intelligent vending machines, smart advertising, smart fitting rooms, and screening robots. Some retailers are also taking advantage of the self-service technologies, which have replaced the customer-service employees with robots and systems, which influences the customer service levels positively. These technological changes have not only helped the retailers in attracting customers but have also helped in

enhancing their experiences and satisfaction level (Fernando, Kumara, Mendis, Wettawa, & Samarasinghe, 2018, p.5). In this context, Nardal & Sahin (2015, p.193) claimed that the technological changes in the retail industries have led to the loss of jobs. These changes have also increased the costs of the retailers as they have to invest in advanced technology and have to stay upgraded and updated constantly. Moreover, it has been seen that the advancement in internet technology has helped businesses in achieving long term profitability. It has helped in meeting the changing needs of consumers.

Agag (2018, p.4) indicated that the use of RFID technology has helped retailers in managing their performance. The technology has helped in managing automation, asset management, and transparency. It has also increased the security level, traceability, and reliability. It also helps in gaining insights into the operations and consumers' purchasing decisions. It has helped in increasing and generating purchasing activities for different brands. It also helps in gaining an understanding of customer behaviour in real-time, which helps the business in integrating innovative strategies to improve and enhance its functions and processes. The information is utilised to formulate appropriate and sustainable strategies and approaches. In addition, Fernando, Kumara, Mendis, Wettawa, & Samarasinghe (2018, p.8) indicated that the concept of smart helps at retail stores has influenced the bricks-and-mortar model of retailers. The smart helps in preventing stock-out situations as the availability of products is automatically recorded and reported. It helps the stores in managing the restocking of inventory according to the demand. Its facilities in managing sales and profitability. The smart shelves include digital camera sensors and analytics technology, which helps in tracking the behaviour of shoppers related to the products on the shelves. It helps in maintaining better efficiency in inventory management and also helps in keeping track of the changes in consumer behaviour and attitude. It shows that retailers with bricks-and-mortar business models have evolved with time by taking advantage of technology and advanced information systems (Basit, Tahir, Khan, & Latif, 2017, p.109).

E-commerce refers to the trend of buying and selling products online. All over the world, the advancement of technology and digitalisation has contributed to the growth and development of e-commerce. With the emergence in the use of the internet, businesses realised the importance of buying and selling products online. The first online transaction was recorded in 1994, and since then the trend of e-commerce has been growing. Many e-commerce businesses have entered and gained success in the market. For example, Amazon and eBay entered the market based on the online retailing model and competed with traditional businesses (Chitrangda, 2016, p.556). Akhter (2016, p.7) stated that e-commerce involves online sources as a guide. It involves commercial transactions, which are conducted online. Moreover, e-commerce is defined as the sale or purchase of goods and services between different organisations using electronic transactions. According to Pi & Wang (2020, p.16),

e-commerce is classified into four categories, which include Business to Business, Business to Consumer, Consumer to Business, and Consumer to Consumer.

Shift from Bricks and Mortar to E-Commerce Business Model

In the mid-1990s, the concept of business model gained attention as different scholars and practitioners started paying attention to the differences and similarities in businesses. It is defined as a content structure, which is designed to create value by exploiting different business opportunities. It involves the articulation of the logic, the data, and evidence that supports a value proposition for the customers. The model is developed to deliver value to the customers. The business model is also defined as the simplified representations of the value creation, proposition, and delivery within an organisational unit (Akhter, 2016, p2). As Basit, Tahir, Khan, & Latif (2017, p.1009) indicated that the retail landscape has dramatically changed with time as a result of multiple factors. Digitalisation is one of the primary factors that led to the transformation of the retail industry. The integration of digital technology into everyday life has significantly transformed the needs and demands of the consumers. It has been seen that customers are seeking value, availability, and accessibility while shopping. In the retail sector, it is believed that transformation and digitalisation have led to the creation of both opportunities and challenges for the businesses. The management of organisations needs to analyse the internal and external factors and environment to plan and develop strategies and approaches accordingly. These changes and developments have influenced the businesses to bring changes and developments in their business models and strategies so that they can cope with the growing challenges. Some researchers have highlighted the benefits of digitalisation for retailers as it has enabled retailers to manage and enhance customer relationships by utilising a new channel. It has also eased the marketing processes. While it has been seen that digitalisation has increased the number of businesses in the market, which has led to increasing competition and challenges for the businesses (Rajgopal, Mahajan, Sharma, & Udas, 2019, p.4).

Agag (2018, p.15) indicated that a business model is designed to ensure the deliverance of value to the customers. It explains how businesses create and deliver value, which helps in capturing the attention of consumers. The profitability and success of a business rely on how effectively and efficiently the business model complements the business strategies and goals. To understand the concept of business model, three components are defined, value creation, value proposition, and value capture. Value proposition refers to them what the company offers to its customers, which influences the customers to pay for it. Value creation is based on how the company creates and delivers value to its customers. Lastly, value capture sums up how the company generates profits, which helps in staying competitive. (Victor, Thoppan, Nathan, & Maria, (2018, p.13) highlighted that some researchers and theorists have used the term business strategy interchangeably for a business model. However, it is important to

understand the difference between the two. The business models reflect the systems that define the different aspects of the business while business strategy is based on ensuring that the company is competitive and can differentiate from its competitors. The businesses need to develop a business model and business strategy that contributes to the achievement of a competitive edge. As compared to business strategies, the business models are more generic and can be easily copied by other businesses. The business model also helps in designing a conceptual framework, which helps in developing activities and strategies that can help in achieving the planned objectives (Sudaryanto, Subagio, Awaliyah, Wulandari, & Hanim, 2019, p.12).

Sudha & Sheena (2017, p.17) revealed that in the past few years, the digitalisation has led to increasing challenges for the brick-and-mortar retailing. The challenges have influenced the businesses to become smarter and offer greater value to the consumers. Continuous innovation and digitalisation have become critically important for retailers, which can help in achieving a competitive advantage. Hallikainen & Laukkanen (2018, p.99) claimed that in many countries, the traditional and brick-and-mortar retailers are shutting down their stores. They are shifting to incorporate the online presence into their business by introducing the e-commerce model. The decrease in the stores has been influenced by the changing needs of the consumers. It has helped the businesses in staying positive and profitable. In 2017, it was reported that around 6885 physical stores were closed in the United States. In 2019, another 8600 physical stores closed.

Pi & Wang (2020, p.14) indicated that the retail business models are specified as a specific retail business model (RBM). Two main characteristics of the retail businesses including selling products manufactured by others and directly interacting with the final customers. With the shift in consumer demands and needs, the retail businesses have transformed their business models and strategies to meet their needs. The businesses are rethinking a business model while paying attention to the retailing formats, activities, and governance. One retailer can integrate different formats as technology is advancing and they can utilise their channels to provide customers with relevant services (Cheng, 2019, p.17). Many economic and social factors have influenced the retailers to transform and adopt the technology. Some retailers have enhanced their channels to serve more customers as they are offering both physical store experience and online shopping experience. The integration of e-commerce methods has helped retailers in reaching more customers belonging to different segments. With the emergence of online shopping trends, it has been seen that many consumers are demanding online shopping options. They are looking for stores that can provide them with home deliveries for products and services. Online shopping is considered as more convenient as it allows consumers to easily compare and choose products after comparing them online. More and more retailers are offering online shopping facilities to the customers. It has helped in enhancing and managing more effective relationships with the customers. It has not only

helped in enhancing the experiences of customers, which has led to satisfaction and loyalty (Vojvodic, 2019, p.9).

Fabri & Marquez (2019, p.26) stated that digitalization has influenced the retailers dramatically in the past few decades. It has changed the demands and needs of consumers. The customers find it more convenient to purchase products online as compared to visiting physical stores. As a result, it has been identified that brick and mortar businesses are facing tough competition from online businesses. Some brick and mortar businesses have also claimed bankruptcy in the past years. The literature indicates that the traditional and physical stores based on bricks and mortar models are focusing on how to create a pleasant and appealing experience for the customers. They are aiming to offer value using innovative aspects and services so that they can enhance the customer experience. The concept of providing a superior customer experience has highlighted the need for mixing features in one store, which is known as a mash-up. Retailers need to focus on how to make their stores attractive and appealing by combining with Omni channels (Kumar & Raju, 2013, p.39).

Factors Influencing Consumers Shopping Behaviour

According to Delafrooz, Rahmati, & Abdi (2019, p.8), the increasing competition has heightened the need for retaining customers along with focusing on attracting new customers. The cost of retaining an existing customer for businesses is less than acquiring a new one. It is identified that customer retention influences the profits of the business from 25 to 85%. Therefore, businesses must pay attention to customer loyalty and retention, which can be achieved by keeping customers satisfied. In consideration, Ghotnian, Vafadar, & Teymori (2018, p.24) highlighted the need for understanding factors that influence customer satisfaction. Primarily, it is essential to give priority to the changing needs and demands of the customers so that the products and services can be shaped and designed accordingly. Many psychologists, marketers, and consumer-behaviour theories have focused on understanding and explaining the customer's decision-making process. It helps in predicting the future purchasing intentions and behaviour of the customers. To maximise the repurchase intentions and loyalty, the businesses are required to pay attention to the factors influencing the customer choices. The literature has presented different purchase process theories and models for repurchase intent, which focuses on consumer's priorities and intensity of needs and wants related to a product (Dhadhal, 2018, p.1709).

Today, it has been seen that consumer behaviour is influenced by a number of motivational factors. The motivation to purchase a product is influenced by the need and demand. As compared to the past, today, consumers have become more demanding. With the advancement in technology, consumers pay attention to gathering information related to the products and brands. They utilise different mediums to gather information, which influences

their purchasing decisions and behaviour. The internet has become one of the most common sources of information, which has influenced businesses to enhance their presence on the web. The gathered information allows consumers to make decisions based on the benefits and value offered by the business (Kumarr, 2019, p.6). It has been seen that businesses operating and dealing in different industries are continuously involved in assessing and evaluating consumer needs and demands. They are using different processes and tools to gather information related to customers. The use of technology has made it easier to gather information and understand the needs and requirements of the customers. The information helps enhance the strategies and products, which facilitates building and maintaining relationships with the customers (Fabri & Marquez, 2019, p.10).

Saha, Sharma, & Kumar (2019, p.19) indicated that the changes and developments in the technology, environment, culture, and social factors have significantly affected the choices of consumers related to different products and brands. The technology has helped in staying updated with the products, services, and brands available in the market. While it has been seen that globalisation has influenced the local culture and social factors. The changing market trends influence consumer behaviour, which has led to increasing their demands. The consumers seek products and services that exceed their expectations and offer value in return for money. They are willing to pay for the benefits and values. The social changes and developments have a significant impact on the needs of customers. Hence, the businesses are paying attention to effective marketing and advertising, which helps customers in realising their needs. Moreover, Accenture (2020) highlighted that consumer needs are influenced by the changes in the environment. For example, the current economic crisis and the Covid-19 pandemic situation have brought a shift in consumer needs and demands. The consumers have become more specific about the brands and values offered. They are looking for safe and healthy products that can meet their changing needs and requirements.

Impact of Covid-19 on Businesses

Bhaduri, et al. (2020, p.11) highlighted that the Covid-19 pandemic has affected the overall economy of the world. Many economies have shut down overnight. The government of different countries has implemented strategies to flatten the Covid-19 curve, which included social distancing, community lockdowns, and stay at home orders. Some countries also announced travel and mobility restrictions. Some industries have faced temporary closures while many businesses faced failure as a result of the incapability of dealing with the pandemic situation. The hospitality, tourism, food and beverage, and many other industries faced more challenges and complexities. Analysing the business environment during the pandemic, it was identified that the demand for food and FMCG products was affected majorly. Some products received more attention as its demand increased while the supply was restricted (Retail Thinktank, 2020). The Covid-19 pandemic resulted in a shift in the

business environment as the political, economic, social, technological, environmental, and legal factors were affected. Along with this, it was identified that the consumer behaviour and decisions were also affected. The global economic downturn was identified, which affected the developing as well as the developed countries. The Covid-19 crisis exerted a profound impact on the businesses operating in different industries. The businesses faced the challenge of ensuring the health and safety of employees while also giving priority to ensuring the enhanced willingness of customers to patronise their businesses. The pandemic has also affected the marketing and management strategies implemented by the businesses. Many businesses identified the need to bring changes in their business models and strategies to cope with the situation so that they can sustain their position in the market (Pathak & Warpade, 2020, p.284).

Gursoy & Chi (2020, p.528) highlighted that businesses regardless of size have been affected by the economic impacts of a pandemic like Covid-19. The economic disruption has been identified across the world. Researchers and analysts are continuously focusing on finding out the level of impact of the Covid-19 pandemic on industries and businesses. While it is known that it is a recent situation and there is extremely limited data available to make any conclusions at this point. The extent of impact cannot be identified at this point. However, it has been seen that the impact of Covid-19 on small and medium businesses are disastrous (Batu, et al., 2020, p.12). The smaller firms are critical to sustaining a functioning economy as they assure the delivery of goods during the time of crisis. It has been identified that many small and medium-sized businesses have suspended their operations or have shut down during these times. While some businesses have transformed their business model and have integrated the e-commerce model. The disaster aid strategies are being highlighted and promoted by economists and researchers to control and minimise the risks so that the economy can be protected. As compared to large businesses, small and medium businesses are facing more challenges due to limited resources and capabilities. The biggest challenge to short and long-term recovery is the lack of financial resources. Most of the SMEs are at high risk for permanent closure after the disastrous impact of Covid-19 as they are unable to manage their expenses and position (Sharma & Jhamb, 2020, p.5).

3. Covid-19 and its Impact on Businesses in the UK

SMEs in the UK

Analysing the business environment of the UK, it was reported that in 2019, 5.9 million private sector businesses are operating in the environment. The number of businesses increased by 200,000 in 2019 as compared to 2018. Small and Medium Enterprises are defined by the number of employees. When the number of employees is less than 250, the business is considered as SMEs. In 2019, it was reported that 5.9 million SMEs were

operating in the market of the UK. It makes up around 99% of the overall businesses. SMEs are further categorised as micro-businesses, which includes enterprises that have a maximum of 9 employees. These accounted for around 96% of all businesses in the UK (Rhodes & Ward, 2020).

The analysis of the private sector indicated that 1.4 million businesses consist of employees while 4.5 million had no employees. Out of the total number of businesses operating in the private sector, 35,600 were categorised as medium-sized businesses, which consisted of 50 to 249 employees. SMEs are significantly contributing to the economic growth and development of the UK (Statista, 2019). As compared to 2018, it has been seen that the business population has increased by 2.4 million. The annual growth in the business population has been reported as 3%. The analysis further indicated that the private sector businesses are not evenly distributed across the UK. 5.2 million private businesses exist in England, 124,000 exist in Northern Ireland, 334,000 are operating in Scotland, while 222,000 are functional in Wales. In London, there are around 1.1 million businesses. Similarly, in the South East of England, there are 940,000 private businesses. In the North of England, there are 152,000 private sector businesses. With time, the number of businesses is increasing as a result of improvement in the economic situation and growing opportunities in the UK. The South West, the South East of England, and London are considered as the most business populated countries as it has the highest business density rates (Merchant Savvy, 2020).

In the overall evaluation of the business environment of the UK, it has been identified that SMEs account for around 99.5% of the overall population. These businesses are operating in different industries and sectors. For example, one-fifth of the total SMEs are operating in the construction sector. While, less than 1% are operating in Mining, Utilities, and Quarrying sectors. A number of SMEs are operating in the Professional, Technical, and Scientific sectors, which makes up around 15% of the total businesses. Similarly, around 9% of the businesses are operating in the Wholesale and Retail Trade and Repair sectors. Overall, SMEs accounted for 60% of employment and contributed by a turnover of 52% at the beginning of 2019. The SMEs are majorly contributing to the Wholesale and Retail trade in the industrial sector (National Statistics, 2019).

Market Analysis

Examining the market of the UK, it has been identified that the British economy has achieved the position of the sixth-largest economy in the world. Since 2016, the economy has slowed down as a result of Brexit. In 2019, the GDP growth was recorded as 1.4% as compared to 2018. Since 2018, the business investments are falling while the consumption level has also decreased. The economic situation has resulted in a slowdown of the real economy while the public debt is 85% of the GDP. The inflation rate was also recorded at 1.8% (Accenture,

2020). The Government authorities are constantly involved in preparing for the situations after Brexit. It has resulted in a shift in legislative and administrative factors. Along with moderate growth in the economy, it has been seen that the employment rate has increased. 3.8% of unemployment was recorded in 2018. However, it is expected that this rate would increase by 2021 (Albonico, Mladenov, & Sharma, 2020).

The UK has been identified as one of the largest producing countries in the world. The agricultural sector of the UK is contributing to 0.6% of the GDP. However, it is high productivity and has helped in managing around 60% of the total food demand. The primary sector employs around 1% of the total population. Also, the fishing sector has been affected in recent years. The UK has some valuable mineral resources and has achieved the position of 10th largest oil producers in the world as it has natural gas reserves. However, it has been seen that the production in this sector is declining. The service sector of the UK employs more than 80% of the workforce. It is majorly contributing to the overall economy of the country. 70% of the GDP has been influenced by the service sector. Moreover, the banking sector of the UK is extremely dynamic. It consists of many multinationals that are operating on a large scale (Albonico, Mladenov, & Sharma, 2020).

Impact of Covid-19 on Business Performance, Strategies, and Products

At the beginning of 2020, it was identified that 5.9 million SMEs were operating in different industries. The business population in the private sector increased by 1.9% as compared to 2019. The analysis indicated that there were 5.94 million small businesses, which had 0 to 49 employees. Overall, the SMEs were around 99.9% of the business population. The total employment in SMEs has been recorded as 16.8 million. As compared to 2019, the total population of the business increased by 1.9%. From 2000, the business population has increased by 2.5 million. The highest rate of increase was identified between 2003 and 2004. Between 2017 and 2018, the business population decreased. The highest number of SMEs are operating in construction (FSB, 2020).

In the case of the UK, it has been identified that Covid-19 has significantly affected the economy. The output per worker lags around 10-15% behind Sweden, France, and Germany. SMEs contribute up to 50% of the total revenue of the UK's economy. It also employs around 44% of the labour force of the country. The Covid-19 has resulted in affecting the lives and livelihoods, which has affected the economy. The effect of the Covid-19 affected the SMEs performance across the UK. The impact of Covid-19 on SME performance across the UK is immense. Studying the impact of Covid-19, it has been found that SMEs are concerned about defaulting on loans. They are also facing challenges in attracting and retaining employees. Many corporations have laid off employees to manage their costs, which has also affected their ability to sustain and manage their supply chains. Many businesses have postponed their

growth projects and initiatives, which has also resulted in affecting their ability to compete and grow. The SMEs are actively seeking support from the government to carry out their operations and respond to the changes as a result of Covid-19. The revenues have been greatly affected, which has also made it difficult for businesses to manage their position and reputation in the market (Le, Nguyen, Ngo, Pham, & Le, 2020, p.3684).

The Government and businesses in the UK need to address the long-term effects of the pandemic situation. They need to consider the long-standing shortfall in productivity, which can affect the economic variables in the long run. SMEs are considered the backbone of the economy. In March 2020, a strict lockdown was announced by the government. As a result, the closure of non-essential businesses occurred. As a result, the businesses had to shut down their operations, which led to affecting sales and profitability. The businesses operating in different sectors faced downfalls. The arts, entertainment, and recreation companies had to temporarily close their operations. All this led to the disruption in the supply chains. Overall, SMEs had to face an increase in rent and debts while they were unable to generate revenues. Approximately, 50% of the SMEs were unable to manage their business costs as their revenues and profitability declined. Moreover, the SMEs incurred bad debt and lost work, earnings, and their ability to repay the loans (FSB, 2020).

In response to the Covid-19 pandemic situation, it was found that many businesses have transformed their business models. Many retailers and manufacturers are using e-commerce models to meet the needs of consumers. As businesses had to shut down their physical operations, it led to affecting the sales. However, the shift to e-commerce allowed selling products online. It not only helps in managing sales but also helps in attracting and retaining customers. The use of technology helped businesses in coping with the current situation. It is known that the impact of Covid-19 is prominently visible, and it is expected to stay for a long-time. It has affected businesses in different ways, which has highlighted the need to take responsive measures to respond adequately. Actively considering the changes in the market trends and consumer needs can help in developing and managing strategies and approaches appropriately. It can help in dealing with the challenges, which can also help in overcoming the fear of managing businesses in the future (FSB, 2020).

Changes in Consumer Behaviour in 2020

Globally, market intelligence has revealed that consumers are paying more attention to what they buy and how they buy. They are constantly demanding value for money. The purchases are centred around the basic needs of people and how these needs are influencing the conscious purchasing attitude of consumers. In the UK, it has been seen that the outbreak of the Covid-19 has resulted in affecting the GDP. It is expected that by the end of 2020, the GDP would decline by 6.5%. The economy has been affected by the uncertainties resulting

from the global pandemic situation (Accenture, 2020). From the analysis of consumer behaviour in response to the Covid-19 pandemic situation, it has been identified that the consumers are focusing on taking more wise decisions. They are choosing products that offer value. The choices are influenced by price, quality, and necessity. The demand for basic products has increased as many consumers are involved in panic shopping. This behaviour became more evident at the beginning of the pandemic, which was in March and April 2020 (Donthly & Gustafsson, 2020). However, as people have started getting familiar with the impact of Covid-19, they are focusing on making better choices. The purchasing decisions are influenced by their experiences, convenience, and need. Most consumers are paying attention to gather information related to the products and services so that they can make wise decisions (Statista, 2019).

It has been identified that the pandemic situation has profoundly influenced the way consumers belonging to different segments behave and live. It has also influenced the variables they value and how they carry out their shopping activities. Researchers believe that some changes are temporary while some believe that the changes are long-lasting. Covid-19 has undoubtedly reshaped industries and sectors. It has brought significant changes in market trends and consumer behaviour (National Statistics, 2019). Since March 2020, it has been seen that the consumer's sentiments and shopping behaviour have changed significantly. The consumers are more involved in online purchasing and shopping as compared to the past. They are looking for convenient options so that they can purchase products that meet their needs. The demand for local products has increased as imports have been restricted. It has provided opportunities for local businesses to take advantage of the changing consumption trends. Moreover, consumers are spending more money on essential goods. They choose healthy products for consumption. The trend of dining out and visiting restaurants has declined as a result of restrictions imposed by the government. Many changes in the behaviour have been influenced by the changes in the regulations and policies (Merchant Savvy, 2020).

4. Research Map and Justification

This part of the report presents the methods and techniques that were entailed during the research. Researchers need to choose the right methods and tools so that the purpose of research can be achieved. In the context of research, it has been seen that there are different methods available that must be selected according to the purpose and objectives of the study. The research onion was used to design the overall methodology, which helped in carrying out the overall research. The methodology is presented below presenting the justifications for the choices made.

Research Variables

During this research, two types of variables were selected, the dependent variable and the independent variable. These are presented below:

Independent Variable – Covid-19 pressure and consumer behaviour

Dependent Variable – SMEs in the UK

Research Hypothesis

Based on the research objectives and variables, two hypotheses have been generated, which are presented below:

H1: Covid-19 pressure has significantly influenced the performance and strategies of SMEs in the UK

H2: Covid-19 pandemic has influenced consumer behaviour that has increased pressure on SMEs in the UK

Research Philosophy

Bhatta (2018, p.75) indicated that the beliefs that influence data acquisition, analysis, and interpretation are considered as philosophies in the context of research. It is important to choose one of the philosophies so that the flow of the study can be managed accordingly. Based on the research onion, four types of philosophies have been identified, which include positivism, interpretivism, pragmatism, and realism. The researchers are required to choose one of these philosophies that can help in making the right choices to choose the right approaches during the study. The philosophy provides a direction to the researchers, which ensures that the research is on the right track (Almpanis, 2016, p.303).

Based on the analysis of the philosophies, it was identified that the pragmatism philosophy is based on the idea of giving priority to the research questions. Pragmatism allows choosing either qualitative or quantitative methods to gather information. Using pragmatism, it is easier to analyse and develop understanding related to different concepts and ideas. In addition, the ideas and concepts gathered using this philosophy can be tested and justified by using scientific approaches. Primarily, it helps in developing logical reasoning for the findings and allows gaining an in-depth review of the identified problems (Etikan & Bala, 2016, p.228).

On the other hand, realism philosophy is another type of research philosophy, which involves conducting scientific inquiries to identify reality. Based on this philosophy, the researchers

are required to choose a scientific approach for gathering and analysing knowledge and information. Moreover, it helps in developing understanding related to the probability of abstract findings related to the independently existing world. When researchers are conducting scientific research, it is important to differentiate between discoveries and interventions, so they can choose realism. It involves the use of five senses to accept reality (Anguinis, Hill, & Bailey, 2019, p.15).

Wahyuni (2012, p.1) indicated that the positivism philosophy is based on observing and defining subjects using objective, logical, and critical beliefs. It is based on the idea that reality can be manipulated by involving different variables, which vary depending on different circumstances. Researchers using the positivism philosophy believe that reality can be manipulated by considering different variables and the variances in these variables. The use of positivism philosophy can help in predicting and observing the environment and the world to find out the objective truth. It helps in explaining realities and predicting the changes and developments. The affirmative nature of the philosophy influences researchers to understand the differences between what is true and what is false. The integration of scientific methods influences the overall research and ensures that the findings and knowledge are presented in a precise manner (Bhatta, 2018, p.76).

Lastly, interpretivism philosophy is a type of research philosophy that is based on subjective interpretation. It is the opposite of positivism philosophy and influences researchers to interpret reality. The focus on conducting research in a natural environment highlights the need for accessing reality based on social constructions. When the problem is interpreted, it includes an examination and investigation of the different variables and elements related to the topic and identified problems. Based on the interpretivism philosophy, researchers focus on analysing and interpreting the different aspects of the identified problems (Taherdoost, 2016, p.39).

In this study, the interpretivism philosophy was adopted as it helped in carrying an in-depth analysis of the research problem. It helped in identifying the changes forced by Covid-19 on the SMEs and how the consumer purchasing decisions have been influenced. The interpretivism philosophy allowed choosing a mixed research design, which helped in investigating the relationship between the selected variables of the study. The problem was investigated by interpreting the gathered data.

Research Design

Research design is an important part of the research method as it influences the data collection methods and instruments used in the study. The research design is based on structuring the research according to the objectives and problem statement. It gives a direction to the study

and helps in making the right choices and decisions. Majorly, there are three types of research designs, which includes qualitative design, quantitative design, and the mixed research method (Melnikovas, 2018, p.31). The qualitative design involves gathering non-numeric data, which can be analysed and interpreted using non-statistical techniques. The quantitative design is based on gathering numerical data, which is analysed and evaluated using statistical techniques and methods. Lastly, the mixed research design involves the use of both qualitative and quantitative methods (Etikan & Bala, 2016, p.14).

During this research, a mixed research design was selected to conduct an in-depth analysis of the research problem. The study aimed to focus on the changes forced by Covid-19 on the SMEs and how consumer behaviour and purchasing decisions have changed. The quantitative data was gathered from primary sources while qualitative data was gathered from secondary sources. It helped in carrying out a scientific investigation to examine the level of impact.

Research Strategy

During the research, researchers are required to choose a strategy that influences their choices and actions. A research strategy is based on giving a direction to the research. It is critical for researchers to choose the right strategies so that the study can be carried out scientifically and logically. Different types of research strategies have been identified, which include action research, survey strategy, archival research, experimenting, and case studies (Fleming & Zegwaard, 2018). Reviewing the different research strategies, it is found that action research is based on conducting a practical investigation. It is based on integrating evaluative and analytical methods to analyse the research problem. The action research method is mainly used when researchers aim to diagnose a problem that requires investigation and evaluation of different reasons and factors involved (Saunders, Thornhill, & Lewis, 2009, p.30).

The survey research strategy is based on involving respondents and participants in research. It is based on gathering information from humans involved or influenced by the identified problems. To conduct a survey, interviews or questionnaires are used as tools for gathering data. It is a cost-effective method, which is commonly used (Almpanis, 2016, p.16). On the contrary, the archival research strategy is based on gathering and evaluating the historical data. It is based on a secondary data collection method. Researchers use archival research when they are conducting research on any historical event. It involves visiting a repository that consists of stored information and records (Basias & Pollalis, 2017, p.76).

The experimenting research strategy is based on the integration of scientific methods to discover information. It is generally selected to analyse the casual relationship between variables under the study. The strategy involves manipulating and changing variables to

examine the relationship (Daniel, 2016, p.18). Lastly, the case study strategy involves conducting research by focusing on a case. It is based on gathering information and developing understanding accordingly. The case study strategy involves an empirical inquiry that is commonly adopted by researchers in social sciences. The in-depth analysis facilitates in exploring and investigating the reasons related to underlying principles. It is more effective when reviewing and analysing problems in real-life contexts (Harrison, Birks, Franklin, & Mills, 2017, p.19).

In this research, the survey strategy was adopted. The research problem was investigated by involving participants and gathering data by conducting surveys. The survey method is appropriate for research carried out in social sciences and is considered as a cost-effective method. The survey strategy is easy to manage and administer and also involves less time as compared to other data collection methods. It facilitated in gathering relevant and reliable data, which helped in reviewing and evaluating the identified problems and helped in answering the research problem.

Data Collection Methods

Mohajan (2018, p.3) highlighted that based on the research on and researches carried out earlier, there are two types of data collection methods. These include primary and secondary data collection methods. The researchers need to choose the right method according to the objectives and purpose of the study. The primary method involves collecting first-hand data. The data is primarily collected for the current research considering the selected variables and hypothesis. On the contrary, the secondary data collection involves the collection of available data from the existing sources. It is not considered as new data. It has been published or reported earlier by other researchers (Mufleh, 2016, p.4).

Considering the two types of data collection methods, in this study, both primary and secondary methods were integrated. The primary methods involved helped gather data using a questionnaire. It helped in finding out the changes forced by Covid-19 on SMEs and how these changes are influencing the consumer behaviour and purchasing decisions related to the products and services offered by the SMEs. While, the secondary data was gathered from research articles, published journals, books, relevant reports, and websites, and news sites. The secondary data helped in developing an understanding of relevant concepts related to consumer behaviour, influencing factors, SMEs, impact of different factors on the business models, shift towards e-commerce models, and many more. Throughout the study, only relevant and reliable sources were selected and integrated.

Instruments of Data Collection

Mohajan (2018, p.18) stated that data collection is an integral part of the research. It is important to choose the right instruments for data collection based on the research design and approach. In this case, a questionnaire was chosen as a tool for primary data collection. A semi-structured questionnaire was designed, which consisted of closed-ended questions. The questionnaire was developed considering the research problem and the selected dependent and independent variables. Likert scale was used to develop multiple choices for the included statements. It helped respondents in answering the questionnaire quickly and easily. The questionnaire also consisted of some personal questions, which were included to manage the reliability and validity of the data. The questionnaire was designed using Google Forms. The link to the questionnaire was generated and shared via emails and social networking sites. It helped in gathering relevant responses in a short period, which supported the study and its completion.

Validity of Instruments

For the validity of the questionnaire, a pilot testing method was applied. Pilot testing is based on using a small sample size to gather information by using the selected instrument of data collection. If the small sample provides relevant results and findings that support the study, it proves that the instrument is valid (Ragab & Arisha, 2018, p.10). In this case, 25 questionnaires were distributed for pilot testing. Then, the reliability test, descriptive frequencies, and regression model were used to examine the data. The findings were relevant and reliable based on pilot testing. It ensured that the selected instrument is valid for this research.

Population, Sample, and Sampling Technique

A population refers to the large collection of individuals or objects. When conducting research, it is important for researchers to determine the population that they intend to target during the research. The focus is based on identifying the population so that the right sample can be chosen Bhatta (2018, p.390). In this study, the population of the UK was targeted. The study focused on examining the changes forced by Covid-19 on the SMEs, so the SMEs of the UK market were targeted during the research. Once the population is chosen, it is important to integrate a sampling technique to select a sample, which is a subset of the population. Mainly, two types of sampling techniques have been identified, which include probability and non-probability sampling. In this case, the non-probability sampling technique was selected as the chances of being selected from the population was not equal. Further, it was identified that there are different types of non-probability sampling techniques, which include

quota sampling, convenience-based sampling, purposive, random, stratified sampling, and snow-ball sampling methods. Each of these have a different impact on the overall sample selected during. It is important to choose the right sampling technique according to the needs of the study.

Considering the different sampling techniques, the purposive sampling technique was selected. The reason for the selection was that purposive sampling is based on choosing respondents who have relevant knowledge related to the research topic and stated problems. In this case, the changes forced by Covid-19 on small and medium businesses were being examined. So, the purposive sampling helped in choosing people who know how Covid-19 has affected the business model and strategies of SMEs, and how it has affected the consumption decisions and behaviour patterns of consumers related to the products and services offered by the SMEs.

The study aims to examine the changes forced by Covid-19 on small and medium businesses and consumer behaviour towards the products. So, the study targets the owners, employees, and staff of the small and medium businesses. A sample size of 250 respondents was selected so that the findings can be justified.

Data Analysis Techniques

Daniel (2016, p.34) indicated that data analysis is based on the integration of tools and techniques to define the data. It allows interpreting the data to develop findings, which can answer the research question. In this research, quantitative data was gathered using a questionnaire. So, SPSS was used for the analysis purpose. SPSS provides different tools and techniques, which can be applied to the data for analysis. In this case, the reliability of the data was checked primarily to ensure that the data is reliable for the analysis. Then, the descriptive frequencies helped in describing the respondents. It helped in grouping the respondents based on the characteristics. Lastly, the regression model was used to study the impact of the selected independent and dependent variables. It helped in answering the research question and competition of the study.

Research Ethics

Following the research, ethics is an important part of the research process. It is important to make the right choices that are morally acceptable (Almpanis, 2016, p.21). So, during this study, ethical actions were given priority. Firstly, during the data collection, the consent of the respondents was given high priority. They participated in the research willingly by sharing their perspectives and opinions. Secondly, the privacy and confidentiality of the personal data were given high priority. The respondents were ensured that the personal data

will only be used for research purposes and would not be disclosed. Thirdly, the reliability and authenticity of the data were given priority. So, the data was not misinterpreted or misquoted anywhere during the research. During the research, it was ensured that no one was harmed in any manner. Lastly, all the secondary sources used during the research were cited in the study to give credit to the original authors and sources. These ethical approaches helped in ensuring that the overall research meets the research criteria.

5. Results

In this chapter, the results and findings are presented based on the analysis of the data gathered during the research. The study involved collection of quantitative data using primary methods while qualitative data was gathered from secondary sources. For the analysis of the quantitative data, SPSS was used, which helped in applying different statistical tests and techniques. SPSS is commonly used as it helps in conveniently applying techniques to test the data, which helps in verifying the hypothesis. Further, the chapter presents a comparison of the primary and secondary data, which helped in developing the findings of the study.

Reliability Analysis

Table 1: Case Processing Summary

		N	%
Cases	Valid	250	100.0
	Excluded	0	.0
	Total	250	100.0

- a. Listwise deletion based on all variables in the procedure.

The case processing summary presents a summary of the cases that were included in this study. Overall, 250 was the sample and 250 questionnaires were distributed accordingly. All the cases were valid and included in the analysis.

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.656	31

The reliability statistics presents the overall reliability of the data gathered during this study. As the table presented, the Cronbach's Alpha value is 0.656 while the N of Items is 31. The N of items indicate the number of questions that were included in the questionnaire. While the Cronbach's alpha value proves that the data was 65.6% reliable. The reliability was weak but acceptable. A higher sample size would have helped in gaining higher reliability.

Frequencies

Table 3: Statistics

		Gender	Age	Qualifications	Sector	Q5	Q6	Q7
N	Valid	250	250	250	250	250	250	250
	Missing	0	0	0	0	0	0	0

The frequencies statistics presented above indicates the number of valid cases included in this study, which was 250.

Descriptive Statistics

The descriptive statistics is one of the statistical tests used to group the responses and identify the frequency of the responses. SPSS was used for applying the descriptive statistics.

Gender

Table 4: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	128	51.2	51.2	51.2
	Female	122	48.8	48.8	100.0
	Total	250	100.0	100.0	

The respondents were asked to share their gender by choosing one of the options. The descriptive statistics indicate that 51.2% of the respondents were male while 48.8% were females. The analysis has helped in identifying that both male and female respondents were available as a part of the small and medium enterprises in the UK.

Age

Table 5: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-28	35	14.0	14.0	22.0
	29-38	72	28.8	28.8	42.8
	39-48	102	40.8	40.8	83.6
	49 and above	41	16.4	16.4	100.0
	Total	250	100.0	100.0	

The respondents were asked to share their age groups by choosing one of the options. From the analysis, it has been identified that only 14% of the respondents belong to the 18-28 group. 28.8% of the respondents belonged to the age group of 29-38, 40.8% belong to the group 39-48, and 16.4% belong to the group of 49 and above. The analysis proved that the highest number of respondents belong to the group of 39 to 48. The participants involved in the study had relevant knowledge and understanding related to the research problem and area of the study.

Qualifications

Table 6: Qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	15	6.0	6.0	6.0
	Graduate	183	73.2	73.2	79.2
	Post-Graduate	52	20.8	20.8	100.0
	Total	250	100.0	100.0	

The respondents were asked to share their qualifications by choosing one of the given options. From the analysis, it has been identified that only 6% of the respondents were undergraduates, 73% were graduates, and 20.8% of the respondents were post graduate. It proved that the respondents involved in the study were educated and qualified. Their responses and opinions were based on their knowledge and understanding related to the impact of Covid-19 on SMEs in the UK.

Sector**Table 7: Sector**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	FMCG	42	16.8	16.8	16.8
	IT	65	26.0	26.0	42.8
	Banking	67	26.8	26.8	69.6
	Food and Beverages	51	20.4	20.4	90.0
	Healthcare	22	8.8	8.8	98.8
	Beauty	3	1.2	1.2	100.0
	Total	250	100.0	100.0	

Further, the respondents were asked to choose one of the sectors in which their business is operating. 16.8% of the respondents belong to the FMCG sector, 26% belonged to IT, 26.8% belonged to the Banking sector, 20.4% belonged to the Food and Beverages sector, 8.8% belonged to healthcare, and 1.2% belonged to the beauty sector. The analysis indicates that all the respondents belong to different sectors, so their views and opinions vary accordingly.

Business Category**Table 8: Business Categorised as SME**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	250	100.0	100.0	100.0

The respondents were asked to share if their business can be categorized as SME or not. From the responses, it was found that all the respondents chose Yes. The study mainly targeted SMEs, so the respondents were selected accordingly.

Covid-19 and its Pressure on Businesses

Table 9: Covid-19 Increased Pressure on the Businesses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	239	95.6	95.6	95.6
	No	11	4.4	4.4	100.0
	Total	250	100.0	100.0	

The respondents were further asked to share their views on whether Covid-19 has increased pressure on the business or not. The analysis indicated that 95% of the respondents agree that Covid-19 pandemic has increased pressure on their business. While 4.4% of the respondents disagreed. The varying responses might be a result of lack of understanding of the impact or it might be a result of varying levels of impact. In some cases, Covid-19 has highly influenced the different aspects of business while in some cases, it has influenced some areas and functions only.

Role in Organisation

Table 10: Role in Organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	60	24.0	24.0	24.0
	Manager	129	51.6	51.6	75.6
	Employee	61	24.4	24.4	100.0
	Total	250	100.0	100.0	

The respondents were asked about their role in the organization, which can help in determining how they view the impact of Covid-19 and what is their level of understanding. It was identified that 24% of the respondents were the owners, 51.6% were working on managerial level, while 24.4% were working as employees. The differences in the role helped

in determining the impact of Covid-19 on businesses based on different views and perspectives.

Regression Analysis

To test the hypothesis and test the relationship between the variables, it is important to choose the right statistical tests and methods. It can help in examining the level of impact. In this case, to determine the impact of Covid-19, the regression analysis was applied. The regression model is commonly adopted by researchers to statistically analyse how one variable influences the other and how much variance occurs in one variable as a result of another. Mainly, two types of regression models have been identified, which include linear and multi linear regression models. It is important for the researchers to choose a model according to the purpose and variables selected in the study. The linear regression model can be used when there is one dependent variable and one or multiple independent variables. Contrarily, the multi linear regression model can be applied when there are multiple dependent and multiple independent variables.

In this case, the dependent variable was SMEs in the UK while the independent variable was consumer behaviour and Covid-19 pressure. The overall research was based on finding out how Covid-19 has influenced consumer behaviour and how it has influenced the SMEs in the UK. So, the linear regression model was applied to find out the impact. The test was applied using SPSS, which helped in applying the selected statistical techniques. The application of linear regression models resulted in the development of Model Summary, Anova, and Coefficients tables.

In this case, two independent variables were taken, consumer behaviour during the pandemic situation and Covid-19 itself. So, the regression model was applied one by one to examine the impact of the variables. The model summary table helps in determining the summarised data, which helped in carrying out the research. The R-value presents the correlation between the selected variables while R-square helps in finding out the level of impact and variance in the variables. The degree of variance can help in finding out whether the relationship is strong or weak. The anova table on the other hand provides information-related to the source of variance, which can be either regression or residual. F-value presents the significance of variables while sig value proves the existence of the relationship. The coefficients table is also formed as a result of the applied test, which helps in determining the existence of a correlation between the variables. The sig value helps in justifying the acceptance and rejection of the hypothesis. The analysis of the regression model applied on the data gathered from questionnaires in this study is presented below:

Table 11: Model Summary for Covid-19 Pressure as Independent Variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.928a	.862	.861	.142
a. Predictors: (Constant), Covid-19 pressure				

In this case, it has been identified that Covid-19 pressure is taken as the independent variable while SMEs in the UK is taken as the dependent variable. The R-value is 0.928 while R-square value is 0.862. It means that the Covid-19 pressure has resulted in affecting the SMEs in the UK by 86.2%. The variation as a result of the pandemic changes is identified as 86.2%, which indicates a strong relationship. It has been proved that the level of impact is strong. So, the model summary proves that there is a relationship, which can be tested using the regression model.

Table 12: Anova for Covid-19 Pressure as Independent Variable

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.486	1	27.486	1357.984	.000b
	Residual	4.412	218	.020		
	Total	31.898	219			
a. Dependent Variable: SMEs						
b. Predictors: (Constant), Covid-19 pressure						

The Anova table presents that F-value was 148.315, which is greater than the test value, which was 4 in this case. It proves the existence of a relationship between the selected variables. Further, it has been seen that the sig value is 0.00. Based on the rule of thumb, it is known that if the sig value is greater than 0.05, the relationship is rejected. However, if the

sig value is lesser than 0.05, the relationship between the variables is rejected. In this case, it is 0.00, so the relationship between changes imposed by Covid-19 and SMEs in the UK has been proved.

Table 13: Coefficients for Covid-19 Pressure as Independent Variable

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.950	.129		-7.348	.000
	Covid-19 pressure	1.218	.033	.928	36.851	.000
a. Dependent Variable: SMEs						

The coefficients table presented above helps in determining the correlation between variables. In this case, it has been identified that the sig value is again lesser than the alpha value. So, the H1 is accepted that Covid-19 pressure has significantly influenced the performance and strategies of SMEs in the UK. The t-value is positive, which indicates a positive relationship. Theoretically, it is known that Covid-19 pandemic situation has increased pressure on the businesses, which has resulted in imposing different types of changes at different levels. The primary data also proved this impact.

Table 14: Model Summary of Consumer Behaviour as Independent Variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.066a	.004	.000	.382
a. Predictors: (Constant), Consumer Behaviour				

In this case, it has been identified that consumer behaviour is taken as the independent variable while SMEs in the UK is taken as the dependent variable. The R-value is 0.066 while R-square value is 0.004. It means that the consumer behaviour changes during Covid-19 have resulted in affecting the SMEs in the UK by 6.6% only. The variation as a result of the consumer behavioural changes is identified as 4% only, which indicates a very weak relationship. It has been proved that the level of impact is very weak, but there is a relationship. So, the model summary proves that there is a relationship, which can be tested using the regression model.

Table 15: Anova as Independent Variable

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.138	1	.138	.946	.332b
	Residual	31.761	218	.146		
	Total	31.898	219			
a. Dependent Variable: SMEs						
b. Predictors: (Constant), Consumer Behaviour						

The Anova table presents that F-value was 0.946, which is lesser than the test value, which was 4 in this case. It proves the existence of a relationship between the selected variables. Further, it has been seen that the sig value is 0.332. Based on the rule of thumb, it is known that if the sig value is greater than 0.05, the relationship is rejected. However, if the sig value is lesser than 0.05, the relationship between the variables is rejected. In this case, it is 0.332, so the relationship between consumer behavioural changes imposed by Covid-19 and SMEs in the UK has been rejected.

Table 16: Coefficients of Consumer Behaviour as Independent Variable

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.541	.270		13.117	.000
	Consumer Behaviour	.068	.070	.066	.972	.332
a. Dependent Variable: SMEs						

The coefficients table presented above helps in determining the correlation between variables. In this case, it has been identified that the sig value is higher than the alpha value. So, the H2 is rejected that consumer behavioural changes do not influence the performance and strategies of SMEs in the UK. The t-value is positive, which indicates a positive relationship. Theoretically, it is known that Covid-19 pandemic situation has changed consumer behaviour, but it does not have a significant impact on the SMEs in the UK.

Summary of Findings

The analysis of the primary findings was based on finding out how the Covid-19 pressure and consumer behaviour are influencing the SMEs in the UK. It is known that the pandemic situation has affected economies and businesses globally. The primary findings proved that Covid-19 pressure has resulted in significantly influencing the SMEs in the UK. Many businesses have faced losses as a result of the lockdown and restrictions imposed by the government. Supply chain disruption has been identified. While it has been seen that the businesses are facing a tough time in managing their operations and processes (Albonico, Mladenov, & Sharma, 2020, p.18). The analysis proved that the pressure has influenced the businesses to shift their bricks-and-mortar model to e-commerce. It has helped in managing sales and profitability. However, the decline in income and revenues cannot be ignored. The pressure has also resulted in increased costs as the businesses are transforming their strategies and approaches. They are investing more in marketing and development along with investing in research and development. To cope with the challenges, it is important to use innovative and creative approaches (Le, Nguyen, Ngo, Pham, & Le, 2020, p.15).

On the other hand, the study focused on finding out the impact of consumer behaviour, which resulted from Covid-19 on SMEs in the UK. The analysis of the primary findings indicated that consumer behaviour does not have a significant impact on SMEs in the UK. This is due to the fact SMEs have achieved a strong position and reputation in the market. Most businesses are using e-commerce models to carry out their operations and meet the needs of the consumers. It has helped in connecting with the customers. The lower significance identified might be a result of a small sample size. The results proved that Covid-19 pressure is higher as compared to the impact of consumer behaviour.

Studying the impact of Covid-19 pressure on the business, it has been identified that it has led to a transformation in the business models and processes. Dramatic shifts have been identified as the businesses are responding to the changing market trends and consumer behaviour. Based on the analysis of the secondary reports and data, it has been found that Covid-19 has significantly changed the consumer's purchasing habits, behaviour, and attitude. It is expected that these changes are long-term and would remain constant after the pandemic too. The changing consumer behaviours have started influencing and transforming the industries. Currently, the impact is visible in terms of changes in sales and consumption patterns. Analysts believe that these changes can pose both challenges and opportunities for businesses operating in different industries.

Considering the changes in consumer behaviour, the analysts believe that businesses must focus on understanding the changing behaviour of consumers by using different parameters. It can help in identifying both opportunities and threats that the business might face in the coming years. Understanding the changing consumer behaviour is crucial for the development of business strategies and approaches. It can also help in adapting to new and emerging consumer trends. Focusing on how consumers are reacting to the pandemic can also help in shaping and designing the marketing strategies, which can help in influencing the consumers belonging to different segments and groups. The analysis also indicated that a dramatic shift has been identified in the business models as consumers are opting for online shopping. Rather than visiting stores, they are choosing online stores to order products according to their needs.

6. Summary, Conclusions, Recommendations

Conclusion

The recent Covid-19 outbreak has significantly influenced the business environment. Some businesses adopted changes in their functions, operations, and models actively. Since the beginning of 2020, the Covid-19 outbreak has gained attention. It has affected different countries around the world. People including business owners, managers, and consumers

have become increasingly concerned about the impact of Covid-19 from the economic and health perspectives. When the pandemic situation was identified, people panicked a lot. They started feeling anxious and panic-buying was identified. Some consumers shopped in bulk so that they have excess supplies available at home. While some consumers remained indifferent to the situation. As a result of Covid-19, researchers have identified changes in the behaviour, attitudes, and purchasing decisions of consumers. It is expected that these changes would remain post-pandemic.

A shift in consumption and shopping pattern has been identified as the people are preferring the purchase of local products. As a result of Covid-19, economic activities that involve close physical contact have been restricted by the government. Governments around the world are placing containment measures to slow down the spread rate of infection. Lockdowns and border closures have severely restricted economic activities. The businesses and consumers are choosing for social distancing to avoid potential contagion and physical proximity. Researchers claim that changes in consumer behaviour have a significant impact on business strategies and approaches. The success of a business relies on how effectively it manages to meet the needs of consumers. The increasing competition and challenges in the business world are influencing businesses to continuously pay attention to effectiveness, innovation, and consumer demands. Covid-19 pandemic has affected the overall economy of the world. Many economies have shut down overnight. The Covid-19 pandemic resulted in a shift in the business environment as the political, economic, social, technological, environmental, and legal factors were affected. Along with this, it was identified that the consumer behaviour and decisions were also affected.

The smaller firms are critical to sustaining a functioning economy as they assure the delivery of goods during the time of crisis. It has been identified that many small and medium-sized businesses have suspended their operations or have shut down during these times. While some businesses have transformed their business model and have integrated the e-commerce model. Analysing the business environment of the UK, it was reported that in 2019, 5.9 million private sector businesses are operating in the environment. The number of businesses increased by 200,000 in 2019 as compared to 2018. The analysis of the primary findings was based on finding out how the Covid-19 pressure and consumer behaviour are influencing the SMEs in the UK. Many businesses have faced losses as a result of the lockdown and restrictions imposed by the government. Supply chain disruption has been identified. While it has been seen that the businesses are facing a tough time in managing their operations and processes. The pressure has also resulted in increased costs as the businesses are transforming their strategies and approaches. They are investing more in marketing and development along with investing in research and development. Studying the impact of Covid-19 pressure on the business, it has been identified that It has led to a transformation in the business models and processes. Dramatic shifts have been identified as the businesses are responding to the

changing market trends and consumer behaviour. Focusing on how consumers are reacting to the pandemic can also help in shaping and designing the marketing strategies, which can help in influencing the consumers belonging to different segments and groups.

Recommendations

Based on the analysis of the primary and secondary findings, the following recommendations have been made, which can help SMEs in the UK in coping with the current situation:

- The SMEs require the support of the Government and policymakers to overcome the impact of Covid-19 in the long run. They need financial and legal assistance to manage their position and performance.
- The businesses are required to invest in research and development so that they can identify the changing trends and elements of the market. It can help in responding adequately, which can contribute to enhancing the ability to compete and grow.
- SMEs must pay attention to consumer needs and demands. They must focus on purchasing behaviour and decisions, which can help in developing marketing and sales strategies. It can help in attracting and retaining customers belonging to different segments.
- The forced changes must be planned considering the available resources and capabilities. They need to manage costs by integrating innovative ideas, which can help in competing and growing.
- The analysis of the market must focus on identifying the emerging challenges and opportunities. Strategies must be developed to overcome the challenges and avail the emerging opportunities, which can help the business in the long run.

7. Bibliography

- [1] Agag, G. (2018). E-commerce Ethics and Its Impact on Buyer Repurchase Intentions and Loyalty: An Empirical Study of Small and Medium Egyptian Businesses. *Journal of Business Ethics*, 12(1), 1-18.
- [2] Akhter, F. (2016). Cultural Dimensions of Behaviors Towards ECommerce in a Developing Country Context. (*IJACSA*) *International Journal of Advanced Computer Science and Applications*, 7(4), 1-15.
<https://doi.org/10.14569/IJACSA.2016.070413>
- [3] Albonico, M., Mladenov, Z., & Sharma, R. (2020). *How the COVID-19 crisis is affecting UK small and medium-size enterprises*. UK: McKinsey & Company.
- [4] Alpanis, T. (2016). Using a Mixed Methods Research Design in a Study Investigating the 'Heads of e-Learning' Perspective towards Technology Enhanced Learning. *The Electronic Journal of e-Learning*, 14(5), 301-311.

- [5] Anguinis, H., Hill, N., & Bailey, J. (2019). Best Practices in Data Collection and Preparation: Recommendations for Reviewers, Editors, and Authors. *Organizational Research Methods*, 3(1), 1-16.
- [6] Bacaj, J. (2019). *4 Ways To Improve Retail Training*. Retrieved April 16, 2020, from <https://elearningindustry.com/improve-retail-training-ways>
- [7] Basias, N., & Pollalis, Y. (2017). Quantitative and Qualitative Research in Business & Technology: Justifying a Suitable Research Methodology. *Review of Integrative Business and Economics Research*, 7(1), 91-105.
- [8] Basit, A., Tahir, A., Khan, M., & Latif, M. (2017). Tacit Knowledge Augmented Customer Relationship Management Systems: An Empirical Investigation. *Pakistan Journal of Commerce and Social Sciences*, 11(3), 1005-1026.
- [9] Batu, A., Bruma, I., Tanasa, L., Rodino, S., Vasiliu, C., Dobos, S., & Butu, M. (2020). The Impact of COVID-19 Crisis upon the Consumer Buying Behavior of Fresh Vegetables Directly from Local Producers. Case Study: The Quarantined Area of Suceava County, Romania. *International Journal of Environmental Research and Public Health*, 17(5485), 1-24. <https://doi.org/10.3390/ijerph17155485>
- [10] Bhaduri, G., Cao, H., Chang, H., Hahn, K., Lee, S., Schofield, S., & Yurchisin, J. (2020). Fashion and Textiles in COVID-19 Global Pandemic: Challenges and Opportunities Open Access. *Special Issue for Clothing and Textiles Research Journal (CTRJ)*, 1(1), 1-15.
- [11] Bhatta, T. (2018). Case Study Research, Philosophical Position and Theory Building: A Methodological Discussion. *Dhaulagiri Journal of Sociology and Anthropology*, 12(1), 72-79. <https://doi.org/10.3126/dsaj.v12i0.22182>
- [12] Cheng, E. (2019). Understanding the webrooming phenomenon: Shopping motivation, channel-related benefits and costs. *International Journal of Retail and Distribution*, 47(10), 12-17. <https://doi.org/10.1108/IJRDM-01-2019-0026>
- [13] Chitrangda, A. (2016). E-commerce: Business & Legal Ethics. *International Journal of scientific research and management*, 2(2), 550-558.
- [14] Daniel, E. (2016). The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. *Journal of Education and Practice*, 7(15), 1-15.
- [15] Delafrooz, N., Rahmati, Y., & Abdi, M. (2019). The influence of electronic word of mouth on Instagram users: An emphasis on consumer socialization framework. *Cogent Business & Management*, 6(1), 1-12. <https://doi.org/10.1080/23311975.2019.1606973>
- [16] Dhadhal, C. (2018). Brand Preference of Consumers for Selected Brands of FMCG Products. *RA Journal of Applied Research*, 4(5), 1708-1712. <https://doi.org/10.31142/rajar/v4i5.06>

- [17] Donthy, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, 117(1), 284-289.
<https://doi.org/10.1016/j.jbusres.2020.06.008>
- [18] Etikan, I., & Bala, K. (2016). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, 1(2), 216-224.
- [19] Fabri, L., & Marquez, I. (2019). Will E-Commerce Dominate Physical Store? *International Journal of Technology for Business (IJTB)*, 2(1), 23-29.
- [20] Fernando, H., Kumara, H., Mendis, H., Wettawa, W., & Samarasinghe, H. (2018). Effects of Brand Experience on Consumer Brand Loyalty in Fashion Retail Industry: Moderating the Role of Gender. *Global Journal of Management and Business Research: E Marketing*, 18(7), 1-6.
- [21] Fleming, J., & Zegwaard, K. (2018). Methodologies, methods and ethical considerations for conducting research in work-integrated learning. *International Journal of Work-Integrated Learning*, 19(3), 205-213.
- [22] Ghotnian, S., Vafadar, M., & Teymori, S. (2018). Consumer behavior in the new methods of ebusiness. *Journal of Novel Applied Sciences*, 7(2), 22-25.
- [23] Gursoy, D., & Chi, C. (2020). Effects of COVID-19 pandemic on hospitality industry: review of the current situations and a research agenda. *Journal of Hospitality Marketing & Management*, 29(5), 527-529.
<https://doi.org/10.1080/19368623.2020.1788231>
- [24] Hallikainen, H., & Laukkanen, T. (2018). National culture and consumer trust in e-commerce. *International Journal of Information Management*, 38(1), 97-106.
<https://doi.org/10.1016/j.ijinfomgt.2017.07.002>
- [25] Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case Study Research: Foundations and Methodological Orientations. *Qualitative Social Research*, 18(1), 1-8.
- [26] Kumar, P., & Raju, V. (2013). The Role of Advertising in Consumer Decision Making. *IOSR Journal of Business and Management*, 14(4), 37-45.
<https://doi.org/10.9790/487X-1443745>
- [27] Kumarr, A. (2019). Factors Influencing Consumer Behaviour. *Journal of Emerging Technologies and Innovative Research*, 6(8), 757-765.
- [28] Le, H., Nguyen, T., Ngo, C., Pham, T., & Le, T. (2020). Policy related factors affecting the survival and development of SMEs in the context of Covid 19 pandemic. *Management Science Letters*, 10(1), 3683-3692.
<https://doi.org/10.5267/j.msl.2020.6.025>
- [29] Melnikovas, A. (2018). Towards an Explicit Research Methodology: Adapting Research Onion Model for Futures Studies. *Journal of Futures Studies*, 23(2), 29-44.

- [30] Mohajan, H. (2018). Qualitative Research Methodology in Social Sciences and Related Subjects. *Journal of Economic Development, Environment and People*, 7(1), 23-48. <https://doi.org/10.26458/jedep.v7i1.571>
- [31] Mufleh, M. (2016). Research Methods Review In The Knowledge Management(Km) And Total Quality Management(Tqm) Studies. *International Journal of Research*, 29(3), 31-48.
- [32] Nardal, S., & Sahin, A. (2015). Ethical issues in e-commerce on the basis of online retailing. *Journal of Social Sciences*, 7(2), 190-198. <https://doi.org/10.3844/jssp.2011.190.198>
- [33] National Statistics. (2019). *Business Population Estimates For The Uk And The Regions 2019*. UK: Statistical Release.
- [34] Pathak, G., & Warpade, S. (2020). Impact of Lockdown Due to COVID-19 on Consumer Behaviour While Selecting Retailer for Essential Goods. *Zeichen*, 6(7), 282-289.
- [35] Pi, S., & Wang, Y. (2020). An E-Tailer's Operational Strategy under Different Supply Chain Structures. *Sustainability*, 12(2141), 1-20. <https://doi.org/10.3390/su12052141>
- [36] Ragab, M., & Arisha, A. (2018). Research Methodology in Business: A Starter's Guide. *Management and Organizational Studies*, 5(1), 15-25. <https://doi.org/10.5430/mos.v5n1p1>
- [37] Rajgopal, K., Mahajan, V., Sharma, P., & Udas, A. (2019). Effects on Consumer Behavior Due to Post Purchase Regret Associated with Online Shopping. *International Journal of Innovative Technology and Exploring Engineering*, 8(11), 1-12. <https://doi.org/10.35940/ijitee.K1092.09811S19>
- [38] Rhodes, C., & Ward, M. (2020). *Business Statistics*. UK: House of Commons Library.
- [39] Saha, S., Sharma, A., & Kumar, A. (2019). Factors That Influence Retail Store Preference and Impact of in-Store Digitization. *International Journal of Recent Technology and Engineering*, 8(4), 1-15. <https://doi.org/10.35940/ijrte.D8951.118419>
- [40] Santhiya, M., & Elavarasan, D. (2020). A Study On Perceptive The Covid-19 Effect On Online Shopping Behavior. *Academic Leadership Journal*, 21(7), 1-15.
- [41] Saunders, M., Thornhill, A., & Lewis, P. (2009). *Research Methods for Business Students*. Prentice Hall.
- [42] Sharma, A., & Jhamb, D. (2020). Changing Consumer Behaviours Towards Online Shopping - An Impact Of Covid 19. *Academy of Marketing Studies Journal*, 24(3), 1-10.

- [43] Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research*, 117(1), 280-283.
<https://doi.org/10.1016/j.jbusres.2020.05.059>
- [44] Sudaryanto, S., Subagio, A., Awaliyah, I., Wulandari, D., & Hanim, A. (2019). Influence Of Brand Image, Price And Promotion On Consumer's Buying Decision Of Fast Moving Consumer's Goods With Culture As A Moderating. *International Journal Of Scientific & Technology Research*, 8(3), 1-20.
- [45] Sudha, M., & Sheena, K. (2017). Impact of Influencers in Consumer Decision Process: the Fashion Industry. *SCMS Journal of Indian Management*, 1(1), 14-28.
- [46] Taherdoost, H. (2016). Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research. *Journal of Management*, 1(1), 35-47.
<https://doi.org/10.2139/ssrn.3205035>
- [47] Victor, V., Thoppan, J., Nathan, R., & Maria, F. (2018). Factors Influencing Consumer Behavior and Prospective Purchase Decisions in a Dynamic Pricing Environment—An Exploratory Factor Analysis Approach. *Social Sciences*, 7(153), 1-14. <https://doi.org/10.3390/socsci7090153>
- [48] Vojvodic, K. (2019). Brick-and-Mortar Retailers: Becoming Smarter with Innovative Technologies. *Strategic Management*, 24(2), 1-15.
<https://doi.org/10.5937/StraMan1902003V>
- [49] Wahyuni, D. (2012). The Research Design Maze: Understanding Paradigms, Cases, Methods and Methodologies. *JAMAR*, 10(1), 15-28.

Analyses of foreign experience of digitalization of supply chain management at SME in China

Alfonz Antoni

Associate Professor
Metropolitan University

Yang Shuhan

Former Student of Metropolitan University

Abstract

Supply chain refers to the network chain structure formed by upstream and downstream enterprises involved in providing products or services to end-user activities in the production and circulation process. All the links are in a safe, fast and efficient way. Reducing costs, improving quality and production speed have become the unique advantages of its expansion. Good supply chain management improves their market share by improving productivity and utilising production competitiveness, raw material storage, commodity transportation, product processing and distributor selection. Informatization and digitalization are one of the hotspots of supply chain management research. For many enterprises, the informatization and digitalization of supply chain management are particularly important due to the complexity of their own business. This article expounds the characteristics of the supply chain and introduces the importance of its digitalization and informatization implementation steps, which includes some important matters needing attention. And the article analyses how a food producer located in Xinzheng, China pays less attention on the supply chain management. Due to the neglect of supply chain management, the company is slowly going bankrupt.

Keywords: *Supply Chain, Management, Digitalization and Informatization implementation, Small and Medium Enterprises*

1. Introduction

Although there are different criteria for the definition of SMEs across countries and industries, in general, SMEs account for a large proportion of both the number of firms and their contribution to the economy and employment. According to statistics, small and medium-sized enterprises in the United States account for about 99.7% of the total number of enterprises. There are more than 20 million SMEs in the EU, accounting for about 99.8%

of the total number of enterprises. Jobs are available for 75% of total employment. Contributes 60% of GDP. SMEs play an irreplaceable role in modern economic development, employment promotion and support for large enterprises.

The intensification of competition caused by globalization has brought great pressure to SMEs, on the one hand, to continuously improve product quality and service levels, on the other hand, to continue to reduce costs to maintain business. Coupled with the inherent disadvantages of SMEs in terms of their own scale and resources, the importance of their supply chain management is highlighted. However, at present, the research on supply chain management is mainly focused on large enterprises (supply chain core enterprises), and the research on SMEs is still very limited.

In the past two years, due to the impact of Covid-19, there have been frequent economic crises, strikes, security accidents, terrorist attacks and other risk events.

It has led to many supply chain crises dominated by supply and demand disruptions, bringing huge losses to enterprises in the supply chain. Smes are in a weak position in the supply chain, and lack the resources and perfect management system necessary to deal with risks compared with large enterprises, so they face greater supply chain risks and losses, and even lead to bankruptcy. Therefore, SMEs must take proactive measures to strengthen the prevention and control of supply chain risks in order to survive and develop in a constantly changing and unpredictable environment.

2. Digitalization and Informatization implementation of Supply Chain Management

The necessity of Digitalization and Informatization implementation

Supply chain contains a lot of information, complex supply and demand network. Customers are all over the country. Faced with numerous complex information, without the support of a unified and reliable information management system, it will be difficult for the management of the enterprise to manage the supply chain properly, and there will be no basis for formulating corresponding improvement measures. The value brought by the informatization of supply chain management is also very attractive (Wu Fuming, 2012).

1. Supply chain information management helps enterprises improve their competitiveness. Information is the core element of supply chain management, and also the foundation to improve the core competitiveness of enterprises. Whether the enterprise can accurately and timely obtain information, improve the response speed of the enterprise to the market and end customer needs, and make immediate response. Is the key to determine the competitiveness of an enterprise.

Supply chain informatization enables enterprises to receive market information in real time, reduces the time of information transmission and reduces the probability of information error.

In terms of responsiveness. Responsiveness refers to the speed at which the supply chain completes customized orders. Real time information is transmitted to relevant enterprises by the information platform, which shortens the response time of the supply chain, facilitates the formation of a closer alliance to make a quick response to the rapidly changing market demand, and improves the response ability of the supply chain to orders. (Wu Fuming, 2012)

2. Supply chain information management is the basis for efficient collaborative work of enterprises. Supply chain information visualization contributes to supply chain system coordination. There are many systems in the supply chain, including various systems, storage systems, transportation systems, sales systems. Managing any one of these systems involves a complex set of trade-offs, and the systems are linked.

To coordinate these aspects of the supply chain, a great deal of information must be available and shared among supply chain members. To be specific, it is of great value to know information such as production status, inventory cost, inventory level, various business capabilities and customer demand for coordination system, especially for cost-saving coordination system. (Wu Fuming, 2012)

3. Supply chain informatization management helps reduce enterprise operation and maintenance costs. The uncertainty in the supply chain is usually manifested by delayed arrival of goods, cancellation of customer orders, out-of-stock losses caused by machine failures, sudden changes in market demand, and the impact of technological uncertainty on costs. Uncertainty increases the amount of inventory in the supply chain dramatically. (Cooper J, 2013)

Supply chain informatization enables enterprises on the supply chain to make cooperative prediction, which can be repeated. All participants discuss future market conditions and work together to arrive at agreed forecasts. This means that all components of the supply chain share information, which reduces risk and thus inventory costs.

4. Information in the global supply chain includes supply source information, production information, distribution information, retail information and demand information. Supply chain information visualization provides effective supporting information for management. The effective flow is directly related to the decision-making and operation of enterprises. (Wu Fuming, 2012)

In large enterprises, information flows are complex. How to obtain, transmit and analyze these information and ultimately form various decisions to support the realization of corporate strategic goals will become critical. Supply chain managers must use this

information to make important decisions that lead the supply chain, and the information system provides enterprise managers with more objective data and scientific analysis, which helps enterprise management to make the right decision at the right time.

The steps and keys of Digitalization and Informatization implementation

The implementation of supply chain informatization is a large project, so it conforms and follows the general theory of project management. Generally follow:

Project launch =>Project objective setting =>Project plan =>Project implementation =>Project completion => Project delivery operation. This paper will discuss some of the important steps and keys.

1. Project objective setting

As the supply chain has many sub-supply chain nodes, it is necessary to have a relatively clear project objective in the project initiation stage. The establishment of this goal is based on the analysis of the current business situation of the enterprise, as well as the goal the enterprise wants to achieve.

This goal must be discussed and agreed upon by the management of the enterprises. In addition, the enterprises's management should act as the Steering Committee of the project, and the high-level Steering Committee is the key to ensure the successful implementation of the supply chain informatization project. (Wu Fuming, 2012)

2. Product selection

The selection of Supply Chain Management system is an important step in the Supply Chain Management project. At this stage, enterprises will decide whether to develop their own products, adopt mature products, or customize development. Products selection directly determines the organization of the follow-up project team, as well as the recruitment of consultants. Generally, there are three ways:

- (1). Use mature products;
- (2). Self-development;
- (3). Select mature product modules for secondary development. (Wu Fuming, 2012)

It is more suitable for supply chain information management project to choose a world-famous mature product for secondary development. Because self-development makes the project cycle is too long, and the cost is relatively high. How to choose supply chain management products needs to be combined with the actual situation of the enterprises to

decide. For example, the fit and compatibility between the product and the enterprises, and the characteristics of the product itself, these are the key factors to consider.

3. Business process review and development

Business process development is very complex and very important one link, from the technical level of supply chain information system is a unified system, it laid the foundation for the standardization of business processes, but each subsidiary must make its original business seamlessly and docking, new system that will lead to some subsidiary in some on the business model transformation. (Wu Fuming, 2012) This also means that enterprises must sort out all the processes and redefine some of them. Because process definitions are fundamental to the business, they are so important that projects have to be careful with process definitions.

The following principles are available for reference:

- (1) The principle of enterprises unification and coordination in the supply chain;
- (2) The unified principle of management thought and strategy formulation;
- (3) The principle of validity.
- (4) The principle of streamlining redundant links;
- (5) The principle of continuous improvement (Wu Fuming, 2012)

4. Orderly implementation

Supply chain informatization implementation is a project with large investment and long project cycle. In order to reduce the risk, the implementation of the project can follow a certain sequence. The following principles can be followed

1 Start from small project

Supply chain informatization project is a large and extensive project. The so-called "small" project means that one or two enterprises can start with the pilot project and start the implementation under the condition of uniform design. In fact, this is also the practice of most projects. Its benefits lie in:

- (a). Depending on the effectiveness of implementation, then decisions can be made on whether to scale up and reduce risks.
- (b). The experience of previous implementation can be learned to improve the quality of later project implementation.

2. From "up" to "down"

Supply chain information project is a large strategic project. The so-called top-down refers to the communication should be communicated from the top leaders first, and the implementation should also be carried out from the headquarters down to each subsidiary:

(a). Top-down communication ensures that projects receive adequate attention during implementation and are easier to advance.

(b). Top-down implementation can set up a model of successful implementation by the headquarters, which has certain appeal to other subsidiaries and is also a great encouragement to the project team.

Supply chain management in digitalization era

Big data is the product of the development of digitalization era. With the development of information technology, the supply chain management of big data has become the general trend.

By analyzing customer information data, market data, sales data and other massive information, enterprises can not only clarify the operation mode of the enterprises's supply chain management, improve the efficiency of supply chain management; It can also enable enterprises to fully dig out the truth behind the data and provide important basis for enterprise management and decision-making. (Gong Jiajing et al. 2019)

At present, the development of the digitalization supply chain operation management mode of some enterprises is not yet mature, and there are still many disadvantages. For example, product quality needs to be improved, data management needs to be improved, and industrial optimization and upgrading are insufficient. Therefore, it is necessary to improve product quality, improve data management and accelerate industrial upgrading to optimize the operation path of enterprise supply chain management in the era of digitalization.

Characteristics of digitalization

Digitalization information refers to the data collection that cannot be captured, managed and processed by conventional software tools within a certain time range. It is a massive, high-growth and diversified information asset that requires a new processing mode to have stronger decision-making power, insight and discovery power and process optimization ability. (Gong Jiajing et al. 2019)

In modern society, digitalization is most widely used in the field of social life. Of course, digitalization also has a wide range of applications in the Internet industry and the financial industry. These industries use big data to accurately locate customers and services, greatly improving the quality and efficiency of service. For the supply chain management of various enterprises, a lot of useful information is mined. Leverage data to improve operational efficiency in supply chain management. It is also helpful to promote the development and progress of enterprises. Digital information has the following characteristics. (Gong Jiajing et al. 2019)

1. Universality of application.

There is almost no limit to the use of digital information, not limited to a single industry, all walks of life are using big data to do information analysis, which shows its wide application.

2. High efficiency.

In the era of explosive growth of information, digitalization can efficiently analyze massive data and obtain important information behind the data, improve the operation efficiency of supply chain management and promote enterprise development.

3. Background of the time is strong.

Digital information is the product of the development of the times. Under the background of the times, data shows the characteristics of changing and diversified forms. Digital information is constantly developing and improving with the change of the times.

The important role of enterprise digitalization in SCM

The supply chain management mode of enterprise big data plays an important role in the work efficiency and development of the enterprise and its upstream suppliers. It is mainly reflected in the following three points:

1. Provide rich data

The most direct function of digital supply chain management mode is to provide rich data for enterprises. Including supplier information data, contractor information data, product quality information data, enterprise potential development prospects and direction data, etc. (Gong Jiajing et al. 2019) With digital analysis, supply chain management and operation will be more convenient and efficient, using the data provided by digital analysis and the important information behind the data. For example, through big data analysis of downstream distributor information, enterprises can provide corresponding services to downstream distributors more accurately, quickly and efficiently, and improve their work efficiency.

2. Providing direction for improving management

In addition to providing rich data for enterprises, the digital supply chain management model can also provide data and relevant information for the further improvement of the enterprises's management model, and help enterprises find the way which suitable for their development in a timely and efficient manner.

Collaborative digital analysis of supply chain management can timely see the advantages and disadvantages of enterprise management mode, find the problems of enterprise management, precise positioning, timely improvement, constantly improve the enterprise management mode, improve enterprise efficiency and comprehensive competitiveness. (Gong Jiajing et al. 2019)

Digital analysis stands out in a number of new technologies such as sharing economy, automatic drive, digital supply chain, cloud computing and advanced robotics. As the most widely accepted and highly recognized new technology, it can also be seen that digital analysis plays a huge role in supply chain management operation and development progress.

3. Provide basis for decision making

The results analyzed with the help of digitalization can not only provide direction for the improvement of enterprise supply chain management model, but also provide practical and reliable basis for enterprise management to make decisions in all aspects. These data come from working practice, and the decision basis provided is practical and reliable. digitalization plays an important role in the analysis and processing of product supply, management, delivery, supervision and other data, which can help enterprise managers make various decisions.

In addition, the development of the digital age has been unstoppable. The development of collaborative digital management mode of supply chain operation is the future development trend. Enterprises should timely optimize the industrial upgrading, improve the management structure, introduce big data management, constantly improve the management and operation methods of enterprises in all aspects, make full use of the supply chain operation management mode of big data, and promote the rapid and efficient development of enterprises.

Problems existing in enterprises of digitalization SCM

The digital supply chain operation management mode of enterprises has many advantages, which can provide a lot of important information and data for enterprise development, and provide important basis for enterprise management and major decision-making. However, at present, the development of digital supply chain operation management mode of some

enterprises is not mature, there are some shortcomings and problems, mainly reflected in the following aspects:

1. Data management needs to be improved

The collaborative big data management mode of supply chain operation of some enterprises is not yet mature in terms of data management and needs to be improved. In this information age, data management is very important to the operation of enterprises. On the one hand, the continuous improvement of data management is also the process of making full use of digitalization in supply chain operation. The continuous improvement of data management is of great significance to the further development of enterprises. (Gong Jiajing et al. 2019) Therefore, in order to make better use of the supply chain operation management mode under digital analysis, enterprises must constantly improve data management.

On the other hand, supply chain capabilities also include real-time distribution tracking and advanced distribution systems, which need high-quality products to give full play to the advantages of the distribution system. Enterprises should constantly optimize their own industrial upgrading, improve data management, improve product quality, and achieve common development and progress with digital analysis. (Gong Jiajing et al. 2019)

2. Insufficient industrial upgrading

In the context of the information age, the explosive growth of information and the continuous development of social productivity make the management mode of enterprise supply chain operation coordinated with big data analysis emerge at the historic moment. Industrial optimization and upgrading is crucial to the survival and development of enterprises. Enterprises may fail to effectively expand the industrial chain, lack of effective market demand, high-quality upstream supplier selection and other problems. (Gong Jiajing et al. 2019)

In order to ensure that enterprises can keep up with the development of digital supply chain operation mode, enterprises should carry out corresponding structural optimization on the basis of maintaining the development of total output and keep moving forward with the update and development of the Times.

Matters needing attention in the implementation of informatization

Based on the above analysis of problems in the process of digital information, it is necessary to continuously evaluate and improve the digital process in practical work. The following points should be grasped in the evaluation and improvement work:

1. No missing items should be collected in the original information, the design should be reasonable, the filling should be standardized, the delivery should meet the requirements, and the audit should be serious. At the same time, the use of original digital information should be supported by corresponding program files.

2. The original digital information should be summarized, sorted and classified. According to the production process, it can be divided into: upstream supplier information and downstream distributor information. According to the internal structure of the enterprises, it can be divided into: management, finance, technical quality and so on.

In actual work, comprehensive classification can be carried out according to the specific situation of enterprises, which is more conducive to the development of work.

3. Members participating in digital information improvement shall be department heads and personnel familiar with the business process of the department and the enterprise. Including financial personnel, sales, production planning, purchasing, equipment managers, quality managers, information managers and so on.

4. With the progress of management and the application of new digital information tools, as well as the change of enterprise operation and management business, the improvement of digital information should be a dynamic process.

Through continuous evaluation and improvement of digital information, a good foundation has been established for the promotion of enterprise internal control work.

1. The business process has been optimized, the quality of information transmission has been improved, and a solid foundation has been laid for the promotion of internal control work.

2. To ensure the authenticity and integrity of the original digital information records.

3. To promote the enterprises's staff to further familiarize themselves with the business flow and management requirements, and integrate them into daily work to standardize management practices.

There are various measures to promote internal control, and it is a simple and easy way to choose the original digital information which runs through the whole process of enterprise internal control. Review, classify, transmit, monitor, evaluate and improve raw data. Make the basic work of internal control more solid and effective. Provides a solid foundation for comprehensively advancing internal control work to a higher level. (Wu Fuming, 2012)

SMEs features

According to the EU Commission's definition, the enterprise which has fewer than 250 employees and an annual turnover not more than 40 million Euros. Or an enterprise with an annual balance sheet of less than 27 million euros and no enterprise or several enterprises (not SMEs) owning 25% or more of the capital or voting rights of the enterprise shall be classified as SMEs. SMEs play an important role in EU economy. Until 2015, there were about 25 million enterprises of all types in the EU, SMEs take up 99.8 percent. 91.8 percent employed fewer than 10 people, the so-called micro-enterprises. SMEs account for 57.5% of turnover in the EU. Even so, the division of SMEs in each countries varies across the EU.

Countries	Name and division criteria
Austria	Small-sized from 1 to 99 employees. Medium-sized from 100 to 499 employees
Belgium	Small-sized under 50 employees.
Denmark	Small-sized enterprises, manufacturing, construction, commerce, service, repair, and crafts under 100 employees.
France	Small and medium-sized enterprises, manufacturing, service industry, more than 11 employees, less than 500 employees.
German	Small-sized enterprises, manufacturing, service employed under 49. Medium-sized enterprises, manufacturing, service employed under 499.
Greece	SMEs from 10-99 employees
Hungary	Medium-sized enterprises have fewer than 250 employees. Sales revenue less than 50 million euros, balance sheet less than 43 million euros Small-sized enterprises have fewer than 50 employees. Sales revenue or balance sheet less than 10 million euros
Italy	SMEs have less than 100 employees and less than 1.5 billion lira in capital
Netherlands	SMEs: Private enterprises employing less than 100 people.

Figure 1: Regulations on SMEs in some EU countries

Supply chain management at SMEs

1. Inventory

Inventory indicates that resources used for future purposes are temporarily idle. In general, people set up inventory to prevent shortages. It's like the water stored in a reservoir. In addition, it also has the role of maintaining the continuity of the production process, sharing the cost of ordering, and quickly meeting the ordering needs of users. (Miao Xianyong, 2015)

The establishment of inventories is due to the inability of SMEs to anticipate future changes in demand, so they have no choice but to adopt the means of coping with various changes. It is also because SMEs cannot make all raw materials fully used, which creates some redundancy and hoarding that people do not want.

Inventory has become an important part of SMEs' supply chain management. The right stock can help SMEs fully reduce costs and improve profits.

In this section, this article describes where SMEs use supply chain management in their inventory

On the one hand, SMEs should determine whether inventory is needed and how much is needed. SMEs are smaller in size and have less storage space. When more inventory is needed, some SMEs use the form of ownership of inventory materials belonging to the supplier. When this scenario is adopted. The quantity recorded on the book is zero, which seems to indicate that there is no inventory. But there are physical objects. This is due to the introduction of a scheme in which ownership of the goods belongs to the supplier.

On the other hand, if there is a provision for stockpiling, it is necessary to determine where these stocks are stored. Because SMEs themselves are smaller, storage capacity is limited. Therefore, it is necessary to decide whether to store it on the demand side or on the supply side.

In addition, it is further determined whether it is stored in the warehouse, or as work in process on the workshop, whether it is stored in the parts library or the finished product warehouse, or stored in several locations at the same time. Provisions should be made in advance for issues relating to storage sites, which are an important part of the terms of reference of managers and custodians. (Libo, 2007)

2. Production

SMEs can divide production planning into: sales order demand, sales stocking demand, raw material procurement, etc. Develop different strategic goals based on different supply chain needs.

In order to ensure that the enterprise has sufficient working capital, it will not be overstocked by raw material inventories of funds and resources. SMEs' production planning departments also strive to balance the contradiction between the guarantee of raw material supply and the level of production products. Ensure that while meeting the uninterrupted production operations, appropriately reduce the raw material inventory to a reasonable range, ensure that there is no product backlog, and ensure a reasonable inventory quantity.

These finished products should be classified by the audit department according to the actual situation to formulate a supply plan. Such a clear plan can not only account for the materials produced in a timely manner, but also timely discover the problems in the production plan and modify the plan reasonably to control the waste of materials and the loss of funds.

Main problems of SCM in SMEs

1. Communication problems

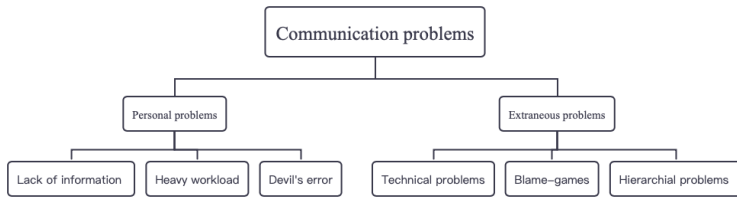


Figure 2: Main communication problems of SCM in SMEs (Nikhil k Mehta, 2014)

2. Produce process problems

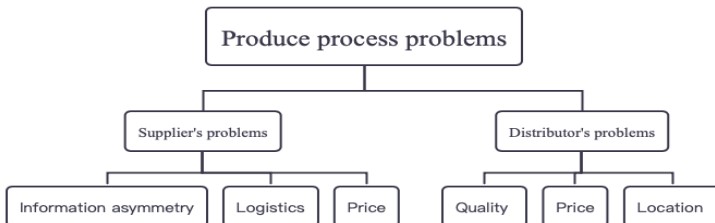


Figure 3: Main Produce process problems of SCM in SMEs

SMEs supply chain financing common mode

In the process of development of SMEs, the number of partners such as upstream suppliers and downstream distributors in the supply chain is always small. At the same time, it is difficult to attract investors' financing due to its low social status. Financing difficulties have always been a problem for SMEs. This chapter gives four suggestions on financing for smnes to face the current problems.

1. Accounts receivable financing

Accounts receivable financing can be divided into accounts receivable pledge financing and accounts receivable transfer financing according to the treatment of accounts receivable.

(1). The accounts receivable pledge financing is refers to the upstream suppliers to enterprise's account receivable creditor's rights as product apply for financing from financial institutions, financial institutions in after receipt of the application for the enterprise, according to the enterprise to provide the amount of accounts receivable financing according to certain proportion to give loans to the financing enterprises, in the loan expires, financing enterprises need to return the corresponding loans from financial institutions and interest. (Gao Xuan et al. 2021)

After receiving the principal and interest returned by the enterprise, the financial institution releases the receivables creditor's rights submitted by the enterprise before the loan and returns the receivables creditor's rights of the financing enterprise. In this process, the receivables creditor's rights are pledged to the financial institution as collateral. (Tan K.C, 2001)

(2). Accounts receivable transfer financing refers to the transfer of accounts receivable creditor's rights arising from the sales contract concluded between the upstream supplier and the downstream distributor to the financial institution providing guarantee. Financial institutions provide financial financing, buyer's credit evaluation, sales account management, credit risk guarantee, accounts collection and other comprehensive financial services. After the loan is due, the downstream buyer will pay the receivables to the financial institution in full. Factoring is divided into recourse factoring and non-recourse factoring. (Gao Xuan et al. 2021)

2. Movables property pledge financing

Movables property pledge financing means that enterprises store movables (commodities or raw materials, etc.) in warehouses recognized or designated by financial institutions as pledges. Under the supervision of financial institutions, enterprises can apply for financing to financial institutions. In the current market, the movable property pledge financing

provided by financial institutions to SMEs includes various forms, mainly inventory pledge financing and warehouse receipt pledge financing.

Inventory pledge financing generally means that the enterprise sends all its movable property to the warehouse or logistics supervision enterprises designated by the financial institution, and obtains financing from the financial institution according to a certain pledge rate. (Tan K.C, 2001)

Warehouse receipt pledge financing is refers to the enterprises to exchange or financial institution approved by the warehouse receipt (proof of bill of lading) as the pledge, according to certain loan-to-value ratio apply to financial institutions for financing, which is must conform to the requirements of the exchange, unified, standard warehouse receipt delivery warehouses, designated by the exchange in the completion of a series of warehousing formalities, registered by the exchange effect of standardized physical documents to pick up the goods.(Liu Yingnan et. al 2014)

3. Order Financing

Order financing refers to the formation of product orders by enterprises according to commercial contracts signed with buyers. Relying on its own credit status, good production capacity and mature technology as the guarantee of the premise, relying on orders to apply for loans from financial institutions.

After obtaining the loan, the enterprise uses the loan funds to purchase raw materials and organize production, and then sends the products to the buyer to repay the principal and interest of the loan to the financial institution immediately after receiving the payment. (Gao Xuan et al. 2021)

At present, with the rapid development of Internet technology and e-commerce, the mutual integration of Internet finance and supply chain has formed the electronic order financing mode. That is, suppliers sign e-commerce contracts with buyers through e-commerce platforms and generate corresponding electronic orders online. Suppliers can rely on the resources of the platform to apply for loans online from financial institutions on the platform.

4. Prepaid account receivable financing

Prepaid account receivable financing is refers to the signing of a sales contract between the enterprise and the upstream supplier (buyer) and the downstream distributor (seller) of the supply chain. Financial institutions may issue prepaid account financing funds to enterprises upon application. Generally speaking, prepaid account receivable financing mainly includes confirming storage financing and financing of future delivery rights.

Confirming storage financing refers to bank credit as the carrier, in bank acceptance for settlement tool, controlled by the bank of goods, warehousing fiduciary custody of goods, the acceptance deposit amount of the partial buyback as guarantee measures, with the goods by the seller by a bank to the supplier (seller) and its distributors (the buyer) provided by the bank acceptance as the method of payment is a kind of financial services. (Gao Xuan et al. 2021)

This model requires the participation of upstream suppliers, downstream distributors (financing enterprises), banks, and warehousing regulators in the supply chain. That is, under the premise that the supplier (seller) undertakes to repurchase, the financing enterprise (buyer) applies to the bank for financing business with the loan amount pledged by the seller's established warehouse receipt in the bank's designated warehouse and the bank controlling its right to deliver the goods as the condition. The bank further excavates customer resources through this mode, and at the same time takes the property right as the guarantee, which is beneficial to reduce the risk of the bank.

Financing of future delivery rights refers to the financing business in which the buyer applies for financing based on the purchase and sales contract between the buyer and the core customer and the right to take delivery in the future and uses it to pay for the goods. After the financing is successful, the buyer can take delivery of the goods in the third-party warehouse with the bill of lading issued by the bank as the proof of delivery, and the sales payment as the first repayment. (Gao Xuan et al. 2021)

Financing of future delivery rights can help buyer enterprises to advance financing, timely complete payment, effectively enlarge their delivery capacity, and help them to obtain higher price discounts. At the same time, the seller can also be exempted from the buyback guarantee, with better market adaptability. In addition, various financing instruments, including loans, bank acceptance bills, etc.

SMEs supply chain financing risk

With the continuous reform and development of the financial market, the financing environment and financing costs of SMEs have gradually improved. However, compared with large enterprises, SMEs are at the end of the industry, relatively weak in economic strength, and low financial transparency. It is often identified as a high-risk customer by financial institutions, and it is difficult to obtain loans from financial institutions. (Liu Yuan et al. 2016)

Supply chain financing can be used as an effective solution to the financing difficulties of SMEs. In the process of supply chain financing. Financial institutions will link the risks that are difficult to control that will only appear in small and medium-sized enterprises with the

higher credit of large enterprises to reduce the financing risks of SMEs. And SMEs can take advantage of the industry advantages and good credit conditions of large enterprises in the core position of the industry to apply for financing from financial institutions, and it is easier to obtain corresponding financing support. (Gao Xuan et al. 2021)

However, in the process of supply chain financing, because there are more enterprises involved in the upstream and downstream of the supply chain, SMEs face more risk factors in the financing process. At the same time, the research of SMEs on a series of related credit risks is relatively backward. Therefore, it is necessary to comprehensively and objectively understand the current supply chain financing mode of SMEs and deeply analyze the risk factors in the supply chain financing process of SMEs. It is of great significance to improve the financing environment of the supply chain of SMEs and promote the healthy development of SMEs.

Analysis of financing risk factors of SMEs

The risks of SMEs in supply chain financing can be divided into external environmental risks and risks posed by each internal participant.

1 External environmental risks

The main external risks of the supply chain can be divided into two categories.

One is the policy risks faced by supply chain development. The uncertainty of the future financing environment of SMEs is also affected by the maturity and cyclical nature of the industry in which the supply chain is located. At the same time, industry-related policies promulgated by relevant government regulators will also affect the future supply chain financing behavior of SMEs.

The other is that the industry position of the supply chain industry will also bring some impacts and risks. If the supply chain is relatively weak in the market in the industry, the stability of all links of the supply chain will be poor. Vulnerable to external factors, increasing the credit risk of SMEs. In turn, financial institutions will reduce the credit evaluation of SMEs in the supply chain and affect enterprise supply chain financing.

2. Risks posed by participating entities in supply chain financing

(1). The core enterprise side

The core enterprise of the supply chain refers to the enterprise in the core position in the industrial chain, which can be controlled by capital flow, information flow, logistics, etc. Starting from the procurement of raw materials, the production and manufacture of

intermediate products as well as the production of finished products. Finally, the goods are sold to the consumers through the sales network. Can fully integrate suppliers, manufacturers, distributors, retailers in the supply chain relationship. Therefore, core enterprises play a very important role in supply chain relations.

The operation of enterprises and the supply chain strategy adopted externally will directly have a series of impacts on upstream suppliers and downstream distributors. If the core enterprises in the supply chain their own operations deteriorate and their credit ratings are downgraded, financial institutions are bound to take countermeasures, for instance early receive of loans. Then SMEs that rely on them for supply chain financing in their industrial chains are bound to be affected by their risks. (Gao Xuan et al. 2021)

(2). The SMEs side

Financing of SMEs through supply chain. SMEs financing through a good supply chain system environment. Rather than ignoring factors such as the company's own operating ability and credit situation because of the supply chain financing behavior of SMEs. Moreover, the first repayment of most supply chain financing products is still the SMEs themselves. Therefore, the operating capacity and credit status of SMEs are still closely related to the risk of supply chain financing. (Gao Xuan et al. 2021)

Under the premise of supply chain financing, although financial institutions will examine the financing risks of SMEs from the perspective of the supply chain as a whole. However, as the main body of financing, financial institutions will still conduct a certain assessment of the operating ability, solvency and credit rating of SMEs

(3). The financial institutions side

As a part of providing funds in the supply chain financing of SMEs, the instability of financial institutions' own behavior is an important factor in generating financing risks. This factor is manifested in its form as long as there is a risk in supply chain lending behavior, although this supply chain financing risk is a characteristic inherent in the financial market itself, its root cause is caused by the operation and expansion of financial capital. (Gao Xuan et al. 2021)

Therefore, factors such as the business strategy and risk appetite of financial institutions will also bring certain risks to enterprises, and selecting suitable financial institutions for supply chain financing can effectively reduce the risks caused by financial institutions.

(4). The third-party supervision of the enterprises side

In supply chain financing activities, financing products such as movable property financing will involve logistics and warehousing third-party regulatory enterprises. During the period when a financial institution provides supply chain financing to an SMEs, the third-party regulatory enterprises will keep the collateral provided by the SMEs according to the requirements of the financial institution. At the same time, the regulatory ability of third-party regulatory enterprises directly affects the smooth realization of supply chain financing. Once there is a problem in the regulatory process, a series of risk events will arise.

Prevention and control strategy for SMEs

1. Strengthen review and improve business contracts

Supply chain financing is based on the real trading background of upstream and downstream enterprises, so it is very important to whether the transaction is real and compliant. It also has an important impact on the credit risk of SMEs. When reviewing the relevant materials of the supply chain financing of SMEs. The financial institution focuses on reviewing the business contract of the supply chain financing and the corresponding invoices and other transaction vouchers of the contract. (Gao Xuan et al. 2021)

Therefore, when SMEs sign commercial contracts with the outside world, they should strengthen compliance review, focus on reviewing the legality of the contract terms, and avoid trade risks due to contract formation, which in turn brings risks to their own supply chain financing. Therefore, when SMEs sign commercial contracts with the outside world, they should strengthen compliance review, focus on reviewing the legality of the contract terms, and avoid trade risks due to contract formation, which in turn brings risks to their own supply chain financing.

2. Enhance the strength of the enterprise

SMEs start from themselves to strengthen business management. Continuously improve the operation and management ability of enterprises, improve performance, market competitiveness and profitability. By increasing research and development investment, we can improve the welfare of technical personnel and enhance competitiveness. At the same time, it is necessary to actively grasp the government's technical support and financial support for SMEs, and continuously improve their ability to carry out technological research and development and innovation. Improve the credit rating of enterprises in financial institutions and the ability to resist financial risks in the supply chain by enhancing their own strength.

3. Cultivate supply chain professionals

SMEs can recruit and cultivate talents with supply chain expertise according to the development needs of their own supply chain business. At the same time, SMEs could carry out personnel skills training, strengthen business learning and experience exchange, and master comprehensive knowledge in practice. High-quality talents are conducive to SMEs to find risk points in the supply chain business and maintain sufficient risk sensitivity. At the same time, through the optimization of a reasonable employee mechanism, an effective incentive mechanism is established. Through a professional supply chain talent team, strengthen the risk prevention of SMEs supply chain business and avoid losses caused by risks.

A brief case study of SCM based on Company X

Company X is a beer producer, faced many problems in the early days of its establishment, and after continuous operational development, it became a well-known beer company in the local area

1. The main problem in the management of the supply chain

(1) Chaotic transportation prolongs the pain of "preserving freshness" caused by mistakes. (Wu Zhiyong, 2015) During the period of continuous expansion of the beer market, the chaotic logistics network became a bottleneck for further development. The chaos of transportation puts the freshness of the beer to the test. Due to the weak monitoring and management, the sales of the remaining fresh beer returned to the manufacturer, forcing the reputation to decline, affecting sales.

(2) Waste of funds brought about by high inventory. (Wu Zhiyong, 2015) Due to the chaos in transportation, a series of problems in production and sales have been brought about by enterprises, which ultimately led to unfavorable market supervision. As a result, companies' forecasts for sales plans were inaccurate, causing the credibility of safety inventory data to decline sharply to almost zero.

(3) Problems caused by the bullwhip effect. (Wu Zhiyong, 2015) Changes in demand in the supply chain affect production plans, increase the large amount of capital investment, and greatly reduce the value of funds. The long whip effect sometimes leads to a decrease in revenue due to out-of-stocks, thereby misleading production and ultimately leading to the inability to implement the "freshness strategy".

2. Solution to the problem

(1) Create a collaborative supply chain platform.

Open up the entire supply chain and establish a unified platform. Company X is not only responsible for market management and expansion, but also responsible for logistics operations within its scope. Due to the effective maintenance of the terminal, Company X's products can accurately make sales plans and report to China Merchants Logistics. Throughout the development process, establish a long-term and effective collaborative supply chain platform. This makes "freshness management" possible. (Wu Zhiyong, 2015) As shown in the figure 4.

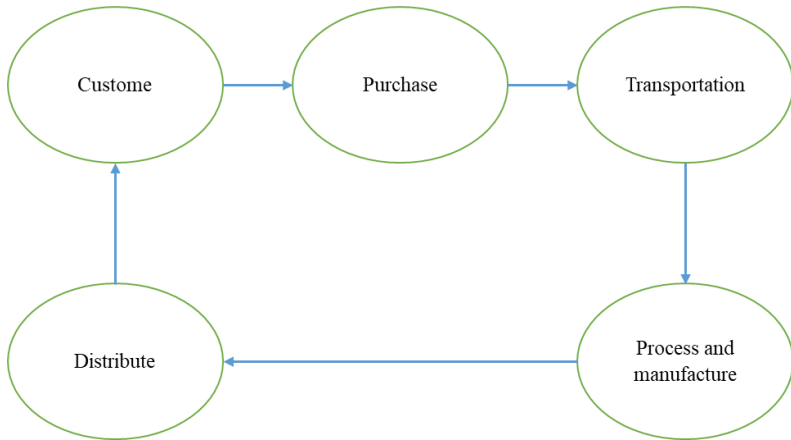


Figure 4 Company X Supply Chain Cycle Diagram (Wu Zhiyong, 2015)

(2) Optimize the inventory structure.

In the logistics and distribution process, Company X plans a specific time for each distribution route and implements automatic vehicle stowage, thereby improving the efficiency and stowage rate of vehicles. In the management of storage equipment, the original warehouse and logistics functions have been abolished, and the distribution network system of "central-regional-customer" has been implemented. Truly achieve the behavior of enterprise optimization inventory structure.(Wu Zhiyong, 2015)

(3) Digital information management and personnel management.

From transportation to warehousing, Company X has changed the past human management mode, with the help of digital information to make orders, train key personnel of enterprises, and cultivate a group of professionals for enterprises. At the same time, we will actively introduce a group of high-end talents in the industry to strengthen product innovation. (Wu Zhiyong, 2015)

On the other hand, it is necessary to maintain the stability of the technical workers in the production line of enterprises, standardize personnel management, create a good enterprise environment, and vigorously carry out vocational training. By creating a space for upward mobility of talents, we cultivate a good corporate culture to ensure that talents can be attracted and retained. (Wu Zhiyong, 2015)

3. Conclusion for Company X

Company X analyzed the problems in supply chain management, proposed countermeasures and implemented them, making Company X thriving and becoming a well-known local brewer.

Conclusion

The above suggestions for SMEs supply chain financing model, financing risks and major problems should be based on SMEs' continuous optimization of the supply chain. The big data management model of enterprise supply chain operation and collaboration came into being with the development and progress of enterprises and the inevitable requirements of the information age. (Gong Jiajing et al, 2019)

Therefore, enterprises can not only introduce this management model, the enterprise itself must also optimize industrial upgrading in a timely manner, continuously improve the enterprise management structure, and optimize the business model. Enable the business itself to keep up with the times and the development of the supply chain. With the coordinated development of the two, enterprises can integrate with the development model and make progress together. The industrial upgrading of enterprises can not keep up with the pace of development of the times, it can not be in line with the new management model, but will have an adverse impact on the development of enterprises, therefore, timely industrial upgrading, the development of the supply chain management operation mode of big data is of great help.

Enterprises that adopt the supply chain operation management mode of big data, on the basis of continuously optimizing the industrial upgrading of enterprises, the supply chain operation will better reflect the advantages of big data analysis. For example, order fulfillment cycles can be significantly shortened and supply chain efficiencies can be greatly and efficiently improved. In addition to these major aspects, the improvement of demand-driven operations and the optimization of service prices also include the optimization of supply and demand. (Gong Jiajing et al, 2019)

In summary, enterprises should continuously improve product quality, pay attention to supply chain management, improve big data analysis, and pay attention to optimizing industrial upgrading. In this way, the development of enterprises can be synchronized with the

development of supply chain management, and the role and advantages of big data analysis under supply chain operation management can be better exerted, so as to promote the sustainable and efficient development and progress of enterprises.

3. Analyze how a Chinese food company face bankruptcy through Supply Chain Management

Company Profile: Company A Food Co., Ltd. was established on August 16, 2006, registered in Xinzheng, China. The registered capital of 12 million yuan equals 1.7 million euros. The scope of business includes (a). Soy product processing. (b). Sales: agricultural and sideline products, pre-packaged food, fruits, aquatic products, fresh meat products, sauce and pickled products, grain and oil products (c). Catering services

Company A development history: Company A was established on August 16, 2006. In 2015, Company A reached its peak. After 2016, the company began to go downhill due to poor management. This article focuses on the reasons for the downward spiral due to company management problems after 2016.

3.1 Questionnaires Analysis

The authors distributed a total of 5 questionnaires to the five managers of Company A, and 5 copies were actually recovered. 18 copies were issued to 18 employees of Company A, and 17 copies were actually recovered.

3.1.1 Employer

The author analyzes the academic qualifications, professional abilities, etc. of the 5 managers of the company. Among them, there are 1 graduate student and 2 undergraduate students. The analysis of professional capabilities is shown in Figure 5. Hold means that the manager is proficient and can use the skill on the job. Knowledge means to be generally understood, but not skillfully used at work. Incomprehension means not very well understood, completely unusable at work.

Ability Analysis	Hold	Knowledge	Incomprehension
Management			
IT			
Sale			
Production			
Market forecast			
Finance			
Accounting			
HRM			

Figure 5.1 Chairman's ability analysis

Ability Analysis	Hold	Knowledge	Incomprehension
Management			
IT			
Sale			
Production			
Market forecast			
Finance			
Accounting			
HRM			

Figure 5.2 Manager 1's ability analysis

Ability Analysis	Hold	Knowledge	Incomprehension
Management			
IT			
Sale			
Production			
Market forecast			
Finance			
Accounting			
HRM			

Figure 5.3 Manager 2's ability analysis

Ability Analysis	Hold	Knowledge	Incomprehension
Management			
IT			
Sale			
Production			
Market forecast			
Finance			
Accounting			
HRM			

Figure 5.4 Sales supervisor's ability analysis

Ability Analysis	Hold	Knowledge	Incomprehension
Management			
IT			
Sale			
Production			
Market forecast			
Finance			
Accounting			
HRM			

Figure 5.5 Purchasing supervisor's ability analysis

The authors analyzed the abilities of five managers in the company and found that:

1. The company's senior leaders do not have IT capabilities, and the company's IT-related business is outsourced to other companies.
2. Although the company is not large, most of the leaders have management capabilities. There is some conflict in this regard.
3. The company's leaders believe that their market forecasts are more accurate.
4. The three leaders of the top management have not studied the knowledge of finance, only the sales manager majored in finance during the university period.

3.1.2 Employee

The author's questionnaire for the company's 17 employees mainly started from the following aspects: gender, age, education, marital status, the previous job and satisfaction with the job in front of them. The 17 questionnaires collected for employees were analyzed.

1. Most of the company's employees are married women aged 30-40, with greater pressure in daily life and low motivation for work.
2. Most of the company's employees have college degrees, and several people have high school degrees, and their academic qualifications are generally low.
3. Most of the employees are local farmers, who have less work experience before getting this job and are not efficient.
4. The time of service in the company is less than one year, and the sense of responsibility for the company is low.
5. 12 out of 17 employees are dissatisfied with the current company's reward and punishment system, believing that the company has fewer rewards.
6. Most employees believe that the current work salary is at a reasonable level, and only 2 employees are satisfied with the current work salary.

3.2 Interview Survey on Company A's Supply Chain Management

The author conducts interviews and surveys of 5 senior leaders of Company A (1 chairman, 2 general managers, 1 sales supervisor and 1 purchasing supervisor).

Asked the following questions

1. Whether production and marketing are coordinated in supply chain management.
2. Whether the supplier is centralized.
3. Whether the supplier's lead time is stable.
4. Whether there are no value factors in daily production activities.
5. Whether there is a bullwhip effect.

The most important of these issues are the I, IV, V and the authors focus on these three issues with five managers of Company A.

3.2.1 Survey Analysis

After interviewing 5 managers, it was learned that Company A had problems with the following aspects

1. Production and marketing are not coordinated. The problem of uncoordinated production and marketing is the most common problem in supply chain management. SMEs mainly follow the following principles in the production process of products: market forecasting - production planning - procurement planning - start production. Company A's main problem in this process is market forecasting. Company A overestimated its own market share and people's spending power. Company A believes that the pricing of its products is at the middle level of the city, and the prices of such products are not high. Company A's main store is located in xx district of Xinzheng, while xx district has low consumption power. Because Company A's products are affected by better packaging, store rent, etc. The price of the product is 1.1 times that of a supermarket. People are reluctant to buy in stores. At the same time, there are three large soy product suppliers in Xinzheng City plus Company A. Company A accounts for only 18% of all sellers in the city. Especially in areas with high people's spending power, the number of stores accounts for only 20% of company A, less than 4% of the city. So the wrong market forecast leads to Company A's products often being easy to sell, resulting in long-term storage and even expiration.

2. Suppliers are more concentrated. The main raw material of Company A's products is soybeans. Company A has contracts with several large local farms. Several farms became the main raw material suppliers for Company A.

3. The supplier's delivery cycle is relatively stable, but the price of raw materials fluctuates greatly. Company A's main raw material soybeans are crops. Each year, it is seriously affected by natural conditions such as temperature and precipitation. Soybean production varies from year to year. In 2016, Xinzheng suffered heavy rains that reduced the yield of all crops by 30%. This makes the price of soybeans rise, while the price of Company A's products cannot rise. As a result, Company A lost more than 1 million yuan in the year, which was equivalent to about 160,000 euros.

4. There are more worthless factors in daily life.

(1). The chairman of Company A mainly engaged in advertising media and other promotional activities in her youth. Company A invested a large amount of money in product promotion in the early days of its establishment. At the same time, Company A has always hoped to become a listed company, and Company A has invested a lot of money in this regard. For SMEs that have just started, although they need to carry out brand promotion, they first need

to increase investment in research and development in their own products. Company A did not properly use the funds in product and supply chain management.

(2). After suffering a large loss in 2016, Company A acquired soybeans on a large scale in 2017 to prevent large-scale natural disasters, and its inventory increased significantly. As a result, the company's original storage space is not enough, and high-priced leasing of warehouses has also become the company's main expenditure.

(3). Employee motivation is not high. Company A is mainly staffed by workers with a low level of education. More than 90% of senior students have a high school degree or below. Most employees have a poor sense of responsibility. In addition, in the early days of the company's establishment, there were fewer incentives, making the quality of the production products lower. Employees produce for the sake of coping with production.

(4). There is a bullwhip effect.

Bullwhip effect refers to: when the nodes in the supply chain only make production or supply decisions based on the demand information from their neighboring subordinate enterprises, the untruthfulness of the demand information will go up the supply chain, resulting in a step-by-step amplification phenomenon. When the information reaches the supplier at the source, the demand information obtained and the customer demand information in the actual consumer market are greatly deviated. As a result of this demand amplification effect, the supply side tends to maintain higher inventory levels, or production readiness plans, than the demand side.

Company A is mainly engaged in the food processing industry. And for food companies. Packaging, etc. needs to be entrusted to other suppliers. According to an interview with Company A, because of the small number of personnel, the management in this regard is more negligent in not changing suppliers regularly and using the optimal cost method. As a result, there are some problems such as high costs, incorrect information, and so on.

3.3 SWOT Analysis

Strengths

1. Company A is smaller and facilitates supply chain and people management.
2. In the early stage of entrepreneurship, the company's personnel have confidence and enthusiasm.
3. Abundant funds. Company A does not require a particularly large capital investment.

4. Advantages of product resources. For agricultural product processing enterprises, the market demand is relatively large.

5. Low operating costs. Company A does not need to invest heavily in day-to-day business management.

Weaknesses

1. Company A has no ideal advertising channels, less daily publicity, and lower public awareness.

2. Company A does not have a suitable sales force.

3. Company A has low ability to train supply chain management professionals.

4. Company A has a relatively single selection of suppliers and distributors. Suppliers are only local farms, and distributors are mostly brand stores and supermarket chains.

5. SMEs are less placed in the supply chain and have a slower access to information.

Opportunities

1. Company A's main products have a high market popularity and a wider audience.

2. The market price of all Company A products is not high. As mentioned earlier, Company A needs to open stores in areas with strong spending power.

3. The government's policies and financial support for SMEs will help the development of SMEs.

4. The industry has broad prospects. Agricultural products are closely related to people's daily lives.

Threatens

1. The shelf life of Company A's main products is short and should not be stored. Once it expires, it will cause losses.

2. SMEs are easy to be suppressed by large enterprises in the process of development.

3. Competitors may be increasing for SMEs.

4. Affected by Covid-19, the economic development trend is not optimistic.

For the future development of Company A, the author give the following suggestions.

1. Closely follow the government's policy support for small and medium-sized enterprises in recent years.
2. Broaden the financing model and do a good job in supply chain management.
3. Recruit IT talents, now is the Internet era, follow the trend of the times to develop.
4. The company's funds need to be used in the right place, and one project needs to be done well before starting the next one.
5. Employee compensation needs to be improved, and most of the employees of Company A are not satisfied with the salary package. Improve the reward mechanism.
6. If the funds are sufficient, the staff team should be updated appropriately. At present, most of the employees are low-productivity groups.

4. Conclusion

SMEs are an important part of the economic system of various countries, and the economic development of SMEs will drive the development of the entire economy. However, in the face of the slow economic development of the Covia-19, SMEs are in trouble. Breaking through this dilemma not only requires the country's macro-control and vigorous funding of capital, but also requires enterprises themselves to take measures to cope and enhance their coping capabilities.

With the rapid development of digital supply chain management, more and more SMEs have embarked on the road of digitalization transformation. Research shows that SMEs are constrained by resource capabilities in the process of digital transformation, often requiring cooperation between upstream suppliers and downstream distributors, as well as the support of large enterprises. However, because of the restrictions imposed on SMEs by large enterprises, information is not shared. Hinder the sharing and application of digital knowledge by SMEs, which in turn negatively affects digital transformation performance.

How to find the entry point for SMEs and embark on the road of information supply chain management is a problem that every enterprise must face. On the basis of introducing the importance of digital supply chain management for SMEs, this paper also analyzes the problems that currently arise in the implementation of informatization. At the same time, this paper also lists several solutions to problems such as financing difficulties for SMEs.

It should also be clearly recognized that the digital supply chain management of SMEs is a gradual process that cannot be achieved overnight. The digital supply chain management strategy of SMEs proposed in the article mainly lies in the digitization of the internal supply

chain of the enterprise. The degree of digitalization of SMEs also depends on the level of social digitalization and industry digitalization.

5. Bibliography

- [1] Cammish R & Keough M(1991) A strategic role for purchasing P22
- [2] Cavinato JL (2004) Supply chain logistics risks [J]. International Journal of Physical Distribution & Logistics Management, 34(5): P383-388.
<https://doi.org/10.1108/09600030410545427>
- [3] Cooper J. (2013) Logistics strategies for global business & Logistics Management P12-23. <https://doi.org/10.1108/09600039310041473>
- [4] Chen D & Yang C (2008) Supply management and implementation methods in supply chain management are briefly introduced P56-58
- [5] De Boer L & Labro E & Morlacchi P. (2001) A review of methods supporting supplier selection European Journal of Purchasing & Supply Management P75-77
[https://doi.org/10.1016/S0969-7012\(00\)00028-9](https://doi.org/10.1016/S0969-7012(00)00028-9)
- [6] Gao X & Guan Z (2021) Research on financing Risk and Development Strategy of Supply chain of small and medium-sized enterprises 10. 13939 /j. cnki. zgsc. 2021. 07. P 170 171
- [7] Gong J & Ning Y& Zhang G (2019) Digitalization era logistics enterprise supply chain management operation model and optimization path NO.1006-5024(2019)05-0080-05 [DOI] 10.13529/j.cnki.enterprise.economy.2019.05.011 P80-83
- [8] Li B (2011) Lenovo global Supply Chain Management analysis NO.1004-2768(2011)09-0170-03 P170 171
- [9] Liang S Y & Du M (2004) Challenges and countermeasures of global supply chain management NO.1672 -0334(2004) 04-0038-05 P39-41
- [10] Liu Y & Chen H Y(2016) Research on supply chain Financing mode and Risk Management of Small and medium-sized enterprises NO.1004-972X(2016) 05-0057-05 DOI:10.16011/j.cnki.jjw.2016.05.011 P57 58
- [11] Liu Y N & Gao L L.(2014) Reflections on financing Difficulties of Small and medium-sized enterprises P48 <https://doi.org/10.2991/itms-15.2015.392>
- [12] Miao X (2015) Research on procurement and inventory optimization of steel enterprises based on Supply Chain Management P15
- [13] Shen C (2011) Research on Supply Chain Financing Mode of Bank
- [14] Tan K.C (2001), 7(1) Framework of Supply Chain Management Literature [J].European Journal of Purchasing& Supply Management P39-48.
[https://doi.org/10.1016/S0969-7012\(00\)00020-4](https://doi.org/10.1016/S0969-7012(00)00020-4)
- [15] Wu F (2012) Information implementation of global Supply Chain Management NO.1008- 4428(2012)05- 38 - 03 P38 39

- [16] Wu Z (2015) Case study of supply chain management NO. 1672-3198(2015)09-0031-02 P31 32
- [17] Zhou Y & Qiu W & Wang Z (2006) Review and Analysis of supply Chain Risk Management Research Progress IV (Systems Engineering) P1 2
- [18] Zhu C (2013) Small and medium-sized enterprises Supply Chain Management considering risk P 7, 8, 12-14

The evaluation of the efficacy of supply chain management of retailers in the context of globalization

Alfonz Antoni

Associate Professor
Metropolitan University

Mao Jiamin

Former Student of Metropolitan University

Abstract

This paper expounds the supply chain management of retail enterprises under the background of globalization, as well as the decision-making and strategy of supply chain management. From the concept, origin and strategy of supply chain management, the analysis and types of retailers' supply chain management are introduced. Finally, specific cases are compared and analyzed to Zara, the representative of clothing retail enterprises famous for fast fashion and non-fast fashion, and Uniqlo, which has an unshakable position in Japan. At the same time, it also introduces the influence of China's e-commerce on the two garment enterprises and gives its strategic suggestions.

Keywords: *Supply chain management, retail supply chain, Zara, Uniqlo*

1. Introduction

In today's era, due to improved living standards, 'fast fashion' has now become a norm in developing and developed nations. Consumer demands related to clothing are changing faster than ever before (Usui, 2018). Haag (2019) had stated that the consumer demand is changing but the industry response is not changing with the same pace. In the clothing industry, few established players like H&M, Garage, Dynamite, Lululemon etc. have adopted innovative supply chain method for meeting the consumer demand, however, most clothing manufacturers are still following the traditional method (Cutler, 2019). The need to have clothing varieties means that clothing manufacturers have to respond quickly to the needs of the consumers (Wang, 2018). In China and other parts of the world, this has not been the case as the trend for fast fashion is there but the response from clothing manufacturers has been slow. Mainly, in China due to slow response of the traditional supply chain model (Ha, 2018).

The focus of this paper is to analyze the changes in Supply Chain network of clothing brands due to globalization and what other clothing manufacturers can learn from it.

In clothing industry, Supply Chain has become an important competitive advantage. Norris and West (2019) defined Supply Chain for clothing as network of designer, fabric manufacturer, apparel producers, transportation providers, wholesalers, and retailers. Gunasekaran (2019) pointed out that Zara and Uniqlo examples are discussed throughout with reference to their operations in China and other countries. Li (2019) stated that Zara's supply chain management in clothing industry is kind of a state of the art. They both have established themselves in the fast fashion industry by managing their Supply Chain network (Xuejie, 2019). Both these brands have huge product development expertise which has allowed them to gain considerable amount of economic benefit and also implement unique marketing strategies (Halldorsson, 2020). The development of their supply chain networks is solely powered by the use of technology, information management, and logistics planning. They have been successful in some markets while they failed in others (Hitt & Ireland, 2019). An overview of the main supply chain strategies which are followed in the clothing retail sector in general and then an analysis of Zara and Uniqlo supply chain strategies is provided in this report. At the end strong suggestion and conclusions are drawn from the analysis conducted in previous sections.

Significance of research on supply chain management

This research will have significance due to the changing nature of clothing industry due to globalization. The clothing manufactures are now able to form partnerships with vendors and suppliers from around the world due to globalization. Information and raw material flow have become easier than ever before. Companies like Zara are managing their central warehouse after importing product in Spain from Mexico, Brazil, and Asia (Sherman, 2019). The trend of fast fashion is on the rise which makes clothing companies quick response to trends very important. Therefore, this research focuses on meeting the following objectives:

- Identify the influence of Supply Chain ability on organization's ability to meet fast fashion trends.
- To identify the influence of technological supply chain ability on competitive edge of clothing manufacturers.
- Establish a link between inventory management and competitive advantage of an organization.
- Understand the working of different supply chain models utilized by different clothing brands and evaluate their effectiveness.
- Provide suggestions for the existing and new clothing manufacturers who are entering the industry or are already a part of it.

The significance of this research is to provide information on the supply chain management techniques utilized by the clothing industry and help other companies in developing countries to adopt a similar kind of framework which will help them in getting to same level of success.

2. Retail supply chain management.

Analysis of the development trend and current situation of the retail industry

Traditional retail

Traditionally, the clothing retailers are governed by the short product cycle, variety of demand, and other features. The retail network that traditional clothing brands had developed was more company centered (Halldorsson, 2020). The manufacturers of clothing used to produce it in bulk and then send the product to the distributors or retail shopping networks. This idea of traditional approach can also be seen in figure 1. The key goal of these retailers was to cover as many customers as possible.

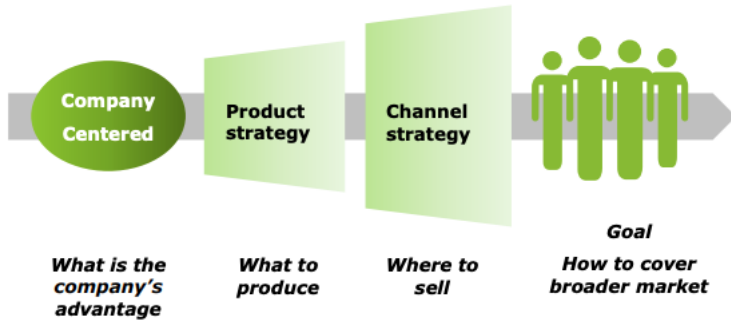


Figure 1. Traditional Approach towards Cloth Retailing

Source: Larson, 2020

In traditional retail network, the sales channel of each company was managed separately by their different business units. These were independent sales resources, supply chain models, KPI metrics, and operations teams (Kouvelis, 2019). This traditional approach of running the supply chain is still utilized when adopting the OMNI channel network. This channel can be seen in the figure where traditional channel management can be seen in the purchase step with introduction of Omni channel. ‘

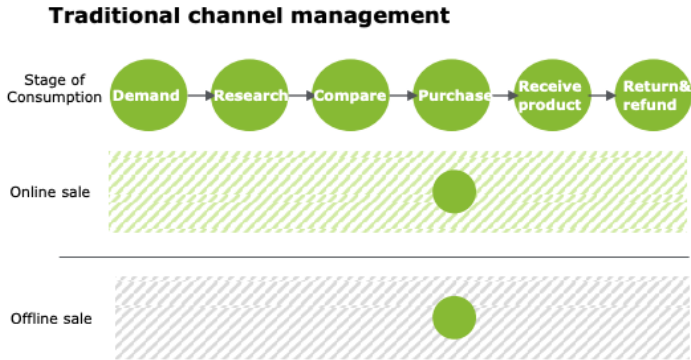


Figure 2. Traditional Channel Management

Source: Tan, 2019

Most companies operating in the clothing business had developed their own traditional network for supply chain. This network consisted of key players from the process of procurement till the purchase of final product (Jacobs, 2019). This can be seen in figure, where suppliers provided the raw material, manufacturer made it, wholesaler sold it to retailer, and then it was delivered to the final customer. There was no feedback loop or the inclusion of technology in the different phases to make it a modern kind of supply chain.

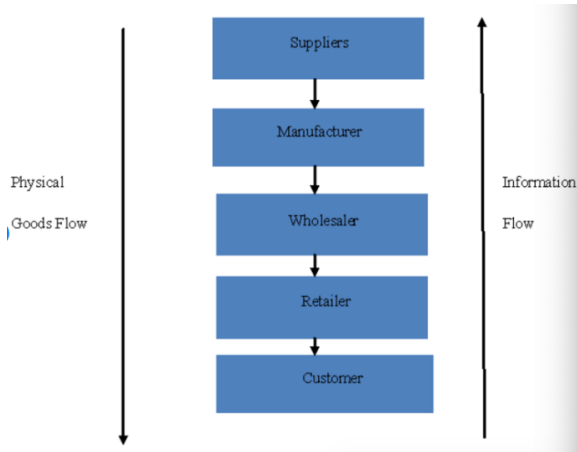


Figure 3. Traditional flow of Supply Chain Management

Source: Haag, 2019

New retail

As the globalization is happening across the world, competition of production and design amongst the clothing brands is getting fierce. This increase in competition is forcing the enterprises to try new ideas in their supply chain management (Lebbar, 2018). Now a days, the change in demand, speed to market, and the ability to accurately forecast demand all have an impact on the supply chain network of an organization. The challenges and problems faced by the clothing industry are higher than usual.

Clothing companies who have a retail outlet now have to deal with different challenges arising due to supply chain issues. They have to keep a variety of clothing while minimizing their inventory turnover (Tan, 2019). The economic growth and improvement in standard of living, customer demands are changing. The market demand is becoming complex and difficult to predict. For example, as of 2017, China's 87 textile garment manufacturer reached an all-time high of \$73.2 billion in manufacturing of end products. From this, 87% of the clothing was produced for small and medium sized enterprises (Sherman, 2019).

In today's retail network of clothing brand, the process of adapting to changing needs of customers is very important. This adaptation process has to be revolutionary as it helps in managing the demand of customers (Mahmoudi, 2021). The target customers who are young and fashion-conscious play a critical role for the designers. The clothing brands must have store leaders who can have conversations with the customers and find out what they are looking for. The feedback from such conversations have to be passed along to the corporate head office for innovative and new design idea.

The role of IT systems like Just in Time ordering, barcodes, RFID etc. is important in traditional clothing retail network as well. Clothing brands need information that is in real time. This information helps in managing their inventory cycles. Sales data, and other sources of information like TV, universities, fashion shows etc. (Halldorsson, 2020), have an impact on the demand for certain kind of clothing. Efficient IT systems enables a company in capturing such information and then utilize it for offering a final product which is liked by the end users. Technology enables the clothing retailers to form their sales channels as well. Without it, there can be a rapid decline in order and situation can get worse.

The pandemic of Covid-19 has changed the retail network to some extent as well. The full implication of the pandemic is not yet obvious; however, analysts believe that traditional retail supply chain is going to cut it. In the post pandemic era, a new approach towards supply chain management will be required so future supply chain disruptions can be avoided (Nakano, 2020). Companies like Coca Cola, Ikea, and Apple learned about the importance of their supply chain and outsourcing their production to countries like China. Now automating the supply chain will be a key goal along with building strong partnerships with

multiple vendors or suppliers to ensure raw material supply is not disturbed (Hansen, 2021). Companies will also track inventory to optimize their storage and replenish it in cost effective manner. This will be important for managing stock outs and minimizing the carrying costs.

Comparative analysis of traditional retail industry and new retail industry

The traditional network of supply chain was disrupted by the introduction of Omni channel only. Traditional brands who were working in the retail sector pointed out that managing supply chain is one of the major problems in traditional retailer network. A survey from Deloitte (2019) described supply chain management as the most important strategic development decision for the clothing companies.

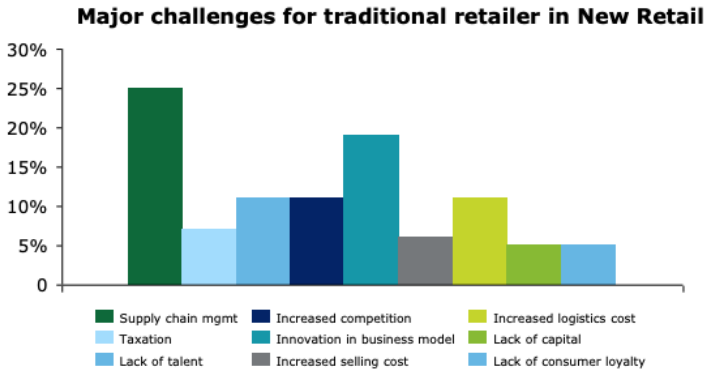


Figure 4. Challenges to traditional Supply Chain

Source: Deloitte, 2019

When we compare the traditional supply chain network with the modern supply chain network, there are obvious differences. The modern supply chain is purely dependent on the interaction with customers and it is very customer centered (Evans, 2019). The traditional approach towards supply chain was more of company centered. Companies produced the product and sent it to the retailer without getting any feedback throughout their value chain process (Xuejie, 2019). This can be seen in figure 5 where product flow is happening in one direction but the information flow is missing. That itself created hug challenges for the manufacturer and supplier of products.

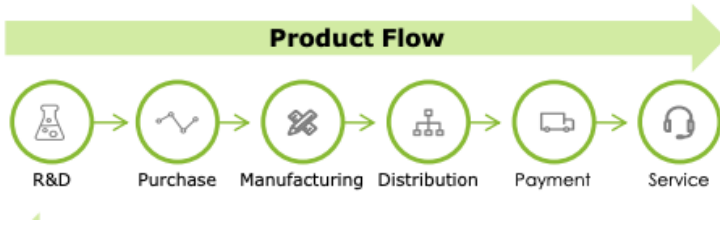


Figure 5. Traditional retail network flow

Source: Lebbar, 2018

The traditional retail network was unable to combine the pieces of supply chain management together. With help of the modern supply chain management, any company can form their own supply chain network. The pieces of this puzzle can be seen in figure. This can be shown as the best practice model or a modern era supply chain. The digitalization of supply chain allows a retailer to collect real time data when they want it (Mckee, 2019). They can capture data with transparency and objectivity. In traditional network this was not possible and even when data was collected it was subjective. In the traditional mode of supply chain, it was difficult to provide differentiated product services to the end users. The model was mostly based on the production and product characteristics. Now, the product personalization is based on the customer expectations. So, the supply chain has to be based on the service and customer requirements. With the traditional supply chain network, multi-channeling was never possible. There were separate sales channels with their own KPIs, functions, and resources. There was lack of incentive for cross channel collaboration (Xuejie, 2019). Now, with the modern supply chain methods, it is possible to share resource throughout the process and provide performance incentives. There is data sharing which allows for cross channel visualization between upstream and downstream partners. This places the supply chain as a business service function with an emphasis on flexibility and service level. Companies are capable of performing end to end supply chain operations to satisfy the customer service needs in customized manner.

Types of retail supply chain management

For clothing brands, quick response is supply chain management terminology which is a key to success. This is a technique which can be used in combination with the Point of Sale (POS) systems for getting first-hand information (Chapman, 2018). The data from POS help in Electronic Data Interchange (EDI) which is important for ensuring that the inventory can be replenished when needed. The idea behind managing the quick response is to replenish certain products at a small number of multi-frequencies for achieving a common goal and shortening the delivery cycle, reducing inventory, improving customer service level, and

competition in the industry. Based on this, the standard supply chain network can be divided into four different types for the clothing retailers. These are:

Functional Type Supply Chain

This type of supply chain was a traditional network of supply chain which was based on the function of each entity involved (Moore, 2020). A company produced their clothing apparel and then distributed it through their supply chain network. The main functions which were performed in this supply chain included product development, distribution, customer services, and marketing.

Innovative Supply Chain

The innovative supply chain refers to the interconnection of key players within the supply chain network. It means that the information is continuously shared in between the supply chain network for improving the whole supply chain network (Stossel, 2019). They have functional areas which work with one another for improving the way a supply chain can operate. For example, it improves the information flow for work orders and funds flow throughout the supply chain.

Push Type Supply Chain

This type of supply chain refers to managing a supply chain which is based on the idea that products will be manufactured and shipped when there is enough customer demand (Hitt & Ireland, 2019). This kind of supply chain model is mainly followed for seasonal items. Zara has an element of push type supply chain for their specific fashion items. The demand from customer basically drives the whole supply chain network.

Pull type Supply Chain

This kind of supply chain is designed for 'make to order'. Their production is based on the actual demand for product. It is hard to find an example of a clothing brand which is following this strategy entirely (Davies, 2021). There are some small and medium size clothing retailers who follow this strategy. In most cases, clothing brands work between the push and pull type of supply chain to manage their demands.

These types of supply chains are developed in the clothing sector because they help in shortening the life cycle for innovative products when demand is uncertain. For an enterprise like Zara or Uniqlo this is important because they have to respond quickly to market needs (Warburton, 2021). Research suggest that most clothing brands are now using innovative

type of supply chain management because it helps in achieving rapid response to the customer demands.

Based on the size of an organization, there are instances when a partnership is established between a supplier and a manufacturer. Zara has created its vertical integrated supply chain mode with partnership and acquisitions (Uncles, 2020). In this kind of supply chain network, a short partnership is established between the supplier and the manufacturer or the seller and the buyer. In clothing industry, this method can be successful if the decision to manufacture a particular item is for short term. It can work in the short run because decision making and information sharing can be improved due to involvement of few players which can improve the quick response capacity of the supply chain.

Amongst all the supply chain types for clothing brands, the main element for success is information sharing. This can be upstream or downstream depending on the supply chain network established by a company. If there is no information sharing then the ability of whole supply chain will be greatly weakened (Moscaritolo, 2020). This can cause a lack of flexibility in the supply chain. Every member of the supply chain will make adjustment based on their internal and external interpretation of the situation which will have an impact on the speed to market. Level of information sharing amongst the different types of supply has a direct influence on quick response of the clothing brands.

Operation performance evaluation system of retail enterprises

For evaluating the performance of retail enterprises, companies have developed certain performance metrics for clothing retailers. Some of the well-known performance evaluation metrics include inventory turnover, bottlenecks, stockouts, cross docking, POS, data management, perfect order, fill rate, customer order cycle, days sales outstanding, freight bill accuracy, cash to cash cycle time, GMROI, holding costs, Supply Chain costs v. sales, on time shipping, delivery times, return rate, inventory to sales ratio, and inventory velocity (Hines, 2021). These are important metrics which helps in supply chain management of clothing retailers.

3. Application analysis of supply chain management of ZARA Company

Introduction of Zara

Zara is a Spanish clothing brand which is known across the world for their innovative business strategy that is powered through their supply chain management mainly. This brand is owned by Amancio Oretago Gaona who is a famous Spanish business tycoon (Jacobs, 2019). After years of operations, Zara has now established itself as the world's largest

clothing retailer. Zara has been successful in establishing such a name with help of the vertical integration model which is something that is difficult to imitate for the competitors (Nashrulla, 2021). This vertical integration of supply chain includes all phases of the fashion process like design, manufacture, logistics, and distribution to corporate owned stores. The core idea behind this vertical integration model is to ensure that products are delivered to the customers when they want it and wherever they want it. For Zara, this level of integration has helped them in shortening the inventory turnover period and establishing a greater flexibility (Wong, 2021). The fashion risk of Zara has been minimized to the greatest possible extent. Some analysts have used the metaphor of 'Quick Change Artist' which resembles the competitive advantage and supply chain management capabilities of Zara. Figure 1 provides a brief overview of this analogy as Zara is capable of offering new clothing designs within five to six weeks as compared to competitors.



Figure 6. Quick Change Art of Zara

Source: Wong, 2021

Supply chain management mode of Zara Company

The Supply Chain Model of Zara is planned intelligently because it allows them to reach their more than 2000 stores worldwide in 88 different countries. For any other clothing brands, this can be a challenging task based on the fact that demand can change quickly. Zara's flexible supply chain allows it to adapt to the latest changes as per the season and then deliver products to end users (Stossel, 2019). They have specific retail locations where market research is conducted for financial viability and checking the market needs for a particular design. The stores are located in areas which have a high traffic and prestigious locations.

These primary locations give customers an opportunity to browse the stores and pick their favorite designs.

By principle, the supply chain management of Zara is divided into four different categories shown in figure 7. This shows their vertical integration as well. The whole process starts at the design and order level where different designers from all over the world are working together to bring the best solutions (Evans, 2019). These designs are then sourced to the manufacturing team which is also ran by Zara. After manufacturing, product is sent to the distribution team where it is finally delivered to the retailers. From the retailer, feedback is provided back to the management team. This feedback is used for creating new designs and fashion. This loop is completed by Zara every time which helps them in maintaining their prestigious brand image.

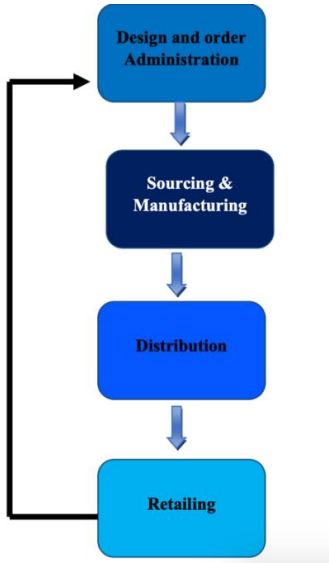


Figure 7. Supply Chain Management of Zara

Source: Craig, 2020

This vertical supply chain model helps Zara in maintaining their market share. Other competitors are unable to compete with Zara or even imitate its supply chain model because all of the expertise that Zara has passes the VRIN test which helps them in building their competitive advantage (Craig, 2020). To better understand the Zara vertical supply chain management figure 8 provides an in-depth overview. Each of these areas will be discussed in the following sections.

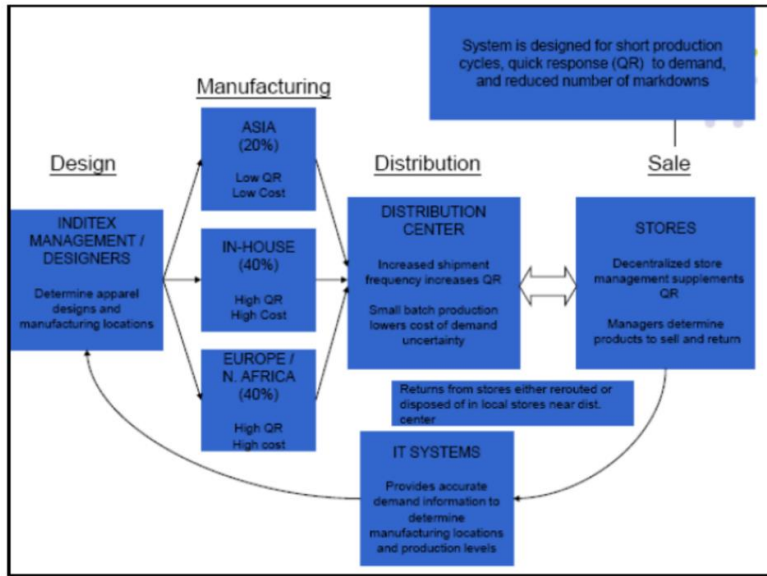


Figure 8. Supply Chain model of Zara

Source: Moore, 2020

Design/Order Administration:

Zara now has a team which is called 'commercial team'. This team is responsible for making designs and managing the ordering administration. This commercial team has different key players like designers, market specialists, and buyers. Each of them has a unique role assigned to them. The designers of Zara have the key role as every year more than 40,000 designs are prepared by them but only 10,000 of them gets produced (Wei, 2019). All the team members in design team work tirelessly for improving the current designs and maintaining their competitive advantage. These designers get ideas from the catwalks, magazines, trade fairs, and discotheques. Every year, Zara creates two main collections. One is the fall/winter collection and the second one is the summer/spring collection. Every year, designers produce their ideas 9 months ahead of the start of the season so sketches are drawn in the Computer Aided Design programs. After approval, fabric, textures, weaving etc. are decided.

Zara is obtaining information from the store leaders continuously. This information is given to the market specialists. The role of these specialists is to inquire the store managers about the trends they are noticing in the field. The store managers are in contact with the market

specialists at all time. Store managers discuss their interpretations with the market specialists before placing a final order (Wang, 2018). This minimizes the failure rate to about 1% whereas for other brands in clothing industry, this failure rate varies between 10% and 12%. Thus, designers, market specialists, and store leaders all work together to track the customer preferences and use the sales information for a detailed analysis of the product life cycle. Based on their conclusion, orders are given to the internal and external suppliers. Therefore, design teams and market specialists then bridge the merchandising along with back end manufacturing processes. Although, this is a time-consuming process but the results are concrete.

Sourcing/Manufacturing

This is an element of their supply chain management which has helped them the strongest competitive advantage. Right now, Zara is manufacturing about 50% of their products in Spain. This is done in their inhouse production facilities (Usui, 2018). They use external vendors for completing the sewing operations. There are different purchasing offices in Barcelona, and Hong Kong from where the fabric and thread is being sourced. The waste cost is reduced through not dyeing the fabric. Zara has assigned this role to Comditel who manages the relationship with external vendors for dyeing, patterning, and undyed fabric supply. This process can be visualized in the figure 9 below where each key player can be seen.

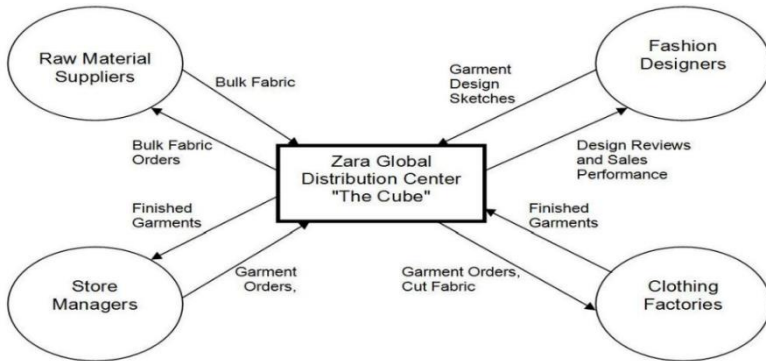


Figure 9. Sourcing network of Zara

Source: Burgen, 2019

The vertical integration supply chain network that Zara has created allows it to make 40% of their own fabric while outsource the rest (Wong, 2021). Once an item has been cut and dyed, the item is then stitched with help of an external local organization. This is done to ensure that Zara is in full control of their design processes. This also allows them to find a particular

vendor who can do the job in best possible way. It adds flexibility and variety in their final process. In terms of final manufacturing, 58% of their product is produced in Spain, 24% is produced in Asia, and 28% is produced in Europe (Davies, 2021). The function of their distribution network can be seen in the figure 9 above.

Suppliers

Zara has a huge network of suppliers. A list of their main suppliers is provided in Appendix A. It shows that they have a wide network of suppliers which is spread across the different continents. The delivery of their raw material is crucial for them for which they have created their own network (Abernathy, 2019). In order to deliver the raw material on time, Zara has developed a network of transport logistics which is strong and reliable. Due to their vertical integration strategy, each of the players are owned by Zara. The figure provides an overview of how Zara gets their product from the supplier and gets it delivered to their manufacturing facilities in Spain.

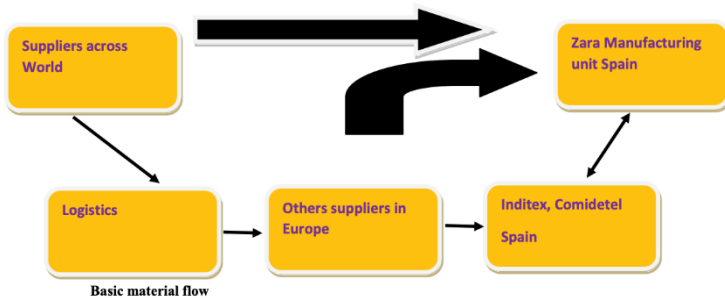


Figure 10. Supply Chain flow of Zara

Source: Mirzaee, 2020

Distribution

Zara developed its distribution channel in a way that it minimizes the lead time which has allowed it to maintain its competitive advantage. Their facility in Spain is about 600,000 square feet which is then accompanied with other production facilities in Argentina, Brazil, and Mexico (Jacobs, 2019). The flow of their production throughout the supply chain network can be seen in figure 11. They have their warehouse at these four blue dots. All the finished product is received by the store in Spain from where internal and external suppliers deliver it across Europe. From there, finished products are delivered to stores worldwide at

least twice a week. In order to create efficiencies in the distribution network, Zara arranges the delivery time according to local time and then ship it through land or air transport facilities. They have developed an inhouse software for managing their logistics throughout the distribution network. It helps them in reducing their delivery time and improving the order processing methods. On average, it takes about 24 hours for delivery of Zara products within Europe (Nashrulla, 2021). It takes about 48 hours for order delivery in most parts of US, Canada, and some Asian countries (Sherman, 2019). Their distribution network is capable of moving 2.4 million items a week. To achieve such milestones, Zara owns a logistic fleet as well. For example, sometimes, chartered flights are used for reaching out to different destination which are far from the distribution centers. While other times, trucks are being used for reaching the locations which are closer to distribution center.

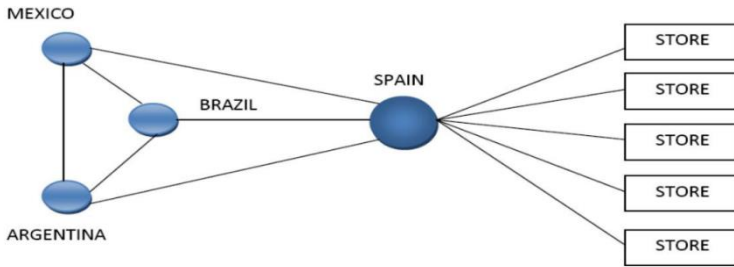


Figure 11. Direct distribution network of Zara

Source: Hines, 2021

Retailing

To manage its retail network, Zara is using the backward vertical integration method. This method allows Zara to keep all players involved until the final order has been placed. This backward integration allows it to maximize their manufacturing efficiency and increase its inventory turnover numbers. The new designs and latest fashion inventory can be delivered to the customers when they need it (Nakano, 2020). The merchandising and store operations established by Zara help them in achieving this goal. This is achieved through establishing a set of Key Performance Indicators for the store managers. Amongst such KPI's, one of the most important elements is the ordering window. Zara ensures that all store leaders are following the order deadline strictly. For example, they have to place an order before 3PM on Wednesday in US and 6 PM on Saturday in Spain. These orders are then tracked closely which helps in maintaining their retailing efforts across the globe.

Merchandising

All of the merchandising which is done at Zara stores follows a principle of high fashion content. They maintain the quality of their products and ensure that styles are changed as needed. They have three main product lines for men, women, and children (Sherman, 2019). Each of these product lines are further divided based on the demographics. For example, women product line is divided based on pricing, fashion style, and age. Zara does not invest enough in advertising. All their marketing budget is going towards their international expansion and making their product economical for the end users. This shows that Zara heavily relies on their brand image and product differentiation (Mazaira, 2019). They also ensure that all of their stores are located in prime locations to attract the end users.

Store Operations

For Zara, sale of their products is not just the end of the Supply Chain process but it is kind of a restart button. After a sale has been completed at the store level, the feedback loop is generated for the design team about the latest trends and fashions. The store leaders have to constantly share their feedback with the design teams. They provide the feedback to design team for change in the fashion style (Doeringer, 2020). The designers then work on their own to create new assignment. At the store level, feedback to designer is the most important part for their Supply Chain management. If this is missed then Zara will be unable to maintain their competitive advantage in the market. Exact customer requirement is obtained and then the whole supply chain network works together in preparing the final product.

Reasons for Zara's success and challenges

One of the major reasons for success of Zara's supply chain management processes is the fact that they keep most of their production inhouse. Their success relies on the fact that an insignificant portion of their production is kept in house to make sure that they their factories are capable of adjusting 85% of their capacity (Alice, 2021). This inhouse production capability of Zara allows it to be flexible with respect to amount, flexibility, frequency, and variety of new products which are being launched by the company. Most of the time, Zara relies heavily on the sophisticated fabric sourcing and sewing which is all available near their production facility in Spain.

Zara design technique are quite different than its competitors. Most of the competitors in industry are producing their seasonal apparel well in advance. Zara on the other hand commits to a six month advance to only 15 or 25% of their total season lineup. It only locks up to 40% of their line at the start of the season (Uncles, 2020). This means that almost 50% to 60% of their clothing designs are manufactured and distributed right in the middle of the

season. If one of their designs becomes a new must have fashion in the street then with their agile supply chain network they are able to produce new designs and keep things rolling during peak demand.

The whole supply chain network of Zara is dependent on the information flow between different key players which shows that they are following an innovative supply chain management process. The stores are capable of communicating feedback from shoppers and customers directly to the marketing specialists (Hitt & Ireland, 2019). They tell the specialists what is being liked and what is not liked which helps in demand forecasting and capturing the fast fashion trends. This new fashion will be made available in stores within 4 to 5 weeks.

The warehouse and inventory management systems that Zara has been using in the past has allowed them to maintain a lean inventory management system. It is impossible to find any kind of overproduction or overstock in most of its warehouses. There is no deadstock. This is possible because of their supply chain which is designed with lean mindset from raw material to finished garments (Moscaritolo, 2020). They also use inventory optimization models to ensure that products get delivered on time when needed and wherever needed.

The vertical integration model that Zara has established allowed them to shrink their marketing budget to less than 0.3% a year (Jack, 2021). Some analysts consider that these are nothing as compared to other clothing companies. Their location strategies give them enough visibility that it can attract customers easily. They are capable of investing this money in producing designs and fashion items which can actually sell. Their presence in high traffic areas allows the customers to visit the brand more often.

In an era of globalization, one of the biggest challenges for Zara can be to expand in areas which are far from its operating sites (Mazaira, 2019). Emerging countries like Pakistan may have a lot of buying potential but it will be difficult for Zara to implement same level of quality in such a country because there might be a lack of supplier's standards and other infrastructural problems. If Zara had established an operating facility in Asia then it could have been able to target a huge chunk of market from such production facility. Perhaps, China could be an ideal location from where they can supply rest of the Asia.

The supply chain network that Zara has developed can be a huge problem from a sustainability point of view. Earlier it was mentioned that Zara is capable of offering their new designs within 24 to 48 hours with them on ground and in air fleet (Bürgen, 2019). Although, this is a strong point of their supply chain network but from an environmental point of view, Zara's carbon footprint can be questioned in future. Also, consumer demand is shifting towards brands that have ethical sourcing (Lebbar, 2018). For Zara, this means that they also have to start showing their sustainability reporting to general public. This can

lead to an increase in cost of production which ultimately can have an impact on their ability to produce fast fashion.

With the pandemic in 2020, supply chain network of almost every company has been exposed. Zara also faced numerous challenges related to raw material and supplier's relationships. Now, new trends suggest that the online sales channels are going to grow which in future might require Zara to completely focus their efforts on developing a strong OMNI channel. Right now, Zara has an online website but future trends indicate that companies will have to create an OMNI channel for providing a unified experience to the consumers (Nakano, 2020). This is where their supply chain can be effective or they might to completely revamp their strategies.

4. Application analysis of Uniqlo supply chain management

Introduction to Uniqlo

Uniqlo Co. Ltd. is a Japanese brand which is mainly offering casual offering to younger generation. They have a design and manufacturer 60% of their own clothing styles (Tan, 2019). They are a wholly owned subsidiary of Fast Retailing CO. Ltd. It is headquartered in Tokyo, Japan. They now have more than 30,000 words across the world. They are presents in more than 88 different countries (Tan, 2019). Their business model is inspired by The GAP as it was the first American retailer who focused on selling the private label brands. As of 2019, Uniqlo opened 2,249 stores across the world in different countries. They have been following internationalization strategy to compete with leading brand names. Some of the well-known markets where they have a considerable amount of market share includes: Australia, UK, US, Canada, China, India, France, and Germany. In these markets, Uniqlo has followed the SPA model to penetrate the market. Their major focus has been on offering affordable casual wear with the best possible quality (Sherman, 2019). A brief overview of their supply chain strategy can be seen in figure 12. Their supply chain was mainly created by Tadashi Yanai. Their supply chain management is mainly led by iterative approach towards product development because the company kept on trying different solutions (Kouvelis, 2019). Their approach towards supply chain is completely different then Zara who is their main competitor. Zara has all inhouse production facilities and they believe in rapidly responding to the market needs as fast as possible. Zara ensure that items get in trade within two weeks. Uniqlo has a complete opposite approach because their design process starts almost one year in advance. Unlike their other competitors who focus on selling large variety of trendy fashion inspired by global fast fashion, Uniqlo is more focused on producing fewer style for urban wear.

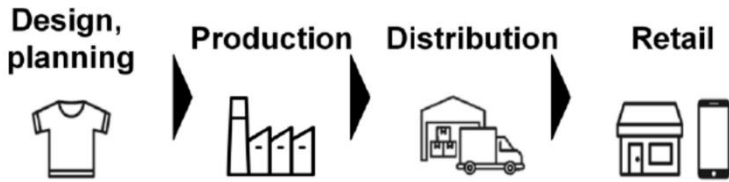


Figure 12. Supply Chain network of Uniqlo

Source: Larson, 2020

Uniqlo supply chain management mode

For Uniqlo, the founder, Tadashi Yanai, has established a unique Supply Chain Management process. This supply chain model followed by Uniqlo is called the Specialty Store Retailer model of Private Label brands (Kouvelis, 2019). This means that this brand is made up of clothing specialty from other brands. The traditional supply chain networks which could be used by Uniqlo has so many intermediary agents. With use of the SPA model, the middle man is completely eliminated (Nakano, 2020). There is a direct sales channel established between the sales and distribution network. This allow Uniqlo to take full control of their supply chain model.

Design

The SPA Model that Uniqlo had adopted has allowed them to maintain very high response rate in some cases. The design process that takes place at Uniqlo is controlled by the craftsman system and the inhouse designers. These is a group that is made of 30 staff members who obtain real time data on sales, production, and inventories as shown in figure 13. The current systems which are used by Uniqlo allows that to start preparing their designs for new seasons six to twelve months before the season starts (Hansen, 2021). They can design, procure material, manufacture products, and deliver to stores. This cycle is repeated every year for obtaining best information and implementing the right decisions. The design process at Uniqlo is impacted by the sales data and real time information obtained at store level.

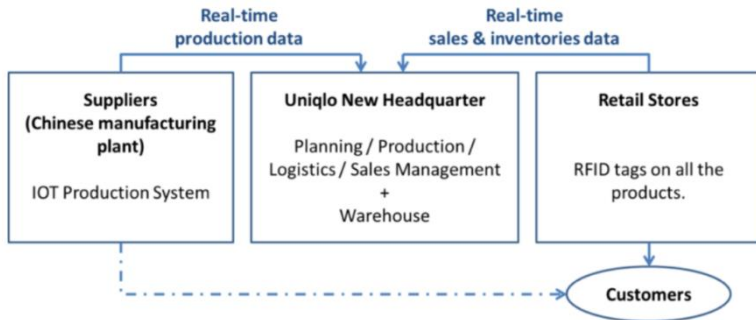


Figure 13. Uniqlo Supply Chain Overview

Source: Doeringer, 2020

Production:

To manage their production, Uniqlo has decided to follow both inhouse and sourcing methods. They outsource some part of their production while other they manufacture by themselves just like Zara. The key different is that Uniqlo has a variety of manufacturers unlike Zara. To solve their sourcing problems related to production, Uniqlo has established a strong screening process. This screening process allows them to vent the manufacturers. They now have 77 different manufacturers in 100 different countries (Abernathy, 2019). For managing its quality, they have developed inhouse quality control methods. The craftsman system is used by Uniqlo for managing their manufacturing needs. This system has 30 design professionals who guide Uniqlo on technical expertise of each manufacturer when outsourcing production. (Caro, 2019) This allows them to maintain same level of quality throughout the production process.

Inventory Management

To manage their inventory, Uniqlo uses the Just In Time (JIT) technology which is powered by the RFID technology (Abernathy, 2019). Their inventory management is done with a focus of minimizing inventory risks and adjusting the inventory timing as per the changes in raw material pricing. To achieve this goal of inventory management, they had partnered with Toray which is a large textile produced that aids in faster delivery of raw material. The advantage of working with Toray is that it works around the year nonstop (Alice, 2021). This ensures that the product that Uniqlo needs is supplied to them throughout the clock without any shortages. For Uniqlo, this is important because it means that they do not have to manage

a full operating facility around the clock. This partnership with Toray allowed Uniqlo to manager their inventory easily.

Location

To manage their supply chain, they select the locations carefully. These are strategic locations which are selected after a careful review by the headquarters. The headquarters make decision related to store design, store development, and shopping experiences. The aim of Uniqlo throughout this process is to use 'Location Marketing' technique and select a place that is not far from their distribution network (Nashrulla, 2021). This also helps Uniqlo in minimizing their advertising expenses. They do not invest heavily in marketing but they do adopt a celebrity endorsement technique for promoting their brand. With respect to supply chain management (Stossel, 2019), Uniqlo is able to keep shorter lead times and manage their inventory effectively by selecting locations that meet their logistical needs.

Distribution

The supply chain network of Uniqlo had never been this efficient as it is now. Before 2017, Uniqlo faced some serious challenges because of their supply chain. They had product shortages and sometimes there was mismatch in the design and consumer demands. To solve this issue, Uniqlo started using RFID tags at their distribution networks which helped them in managing their warehouses inventory counts (Moscaritolo, 2020). This improved the process for inventory count and distribution. By using the RFID technology, Uniqlo ensured that they know it all time that how much product is available for them and where is it available. They were able to share this information at different levels of the organization which made the establishment of direct distribution much easier and cost effective. Coordination and cooperation throughout the supply chain was increased as a result of this effort.

SPA Model at Uniqlo

The idea behind Uniqlo is that it wants to be a specialty retailer of private label apparels. They have developed their own advance model which is made up of their own brands of clothing. This model connects the production and sales together. The customers and producers are directing connected which cancels out the role of intermediaries. This allows the brand to not only respond to the customer needs on time but also make the product available to them at a faster speed (Uncles, 2020). This SPA model consists of clothing, procurement, product planning, development, manufacturing, and distribution ideas. The inventory is being managed throughout the different networking players. This model breaks

the traditional model followed by other clothing companies because it allows to cut the middlemen. The main advantage of this model is that it cuts down the cost of circulation and also production costs are lowered. This model also ensures that the sales data from each store is delivered directly to the factory for quickly managing production (Xuejie, 2019). As a result, the inventory times are shortened to eight days which allows them to establish a leading position in clothing Industry.

The Role of TCM in Uniqlo Supply Chain Management

Uniqlo supply chain is mainly powered with help of the Total Chain Management process. This is a basis for the traditional supply chain management network. The use of TCM allows for improved overall ability of commodity management through focusing on the stores sales data, market information, analysis of trends, and creating a centralized management and information sharing center (Nashrulla, 2021). At Uniqlo, this done by ensuring that marketing, sales, and planning department managers meet together for sharing information. They analyze the store data with help of the different POS system available to them. This allows for forecasting market demand and ordering enough inventory for finishing products. Each of the store managers need to know their specific circumstances and then enter the delivery date and time in order to submit their order to the headquarter. The headquarters then arranges the shipping and logistics of the order (Doeringer, 2020). After this, the headquarter manages inventory level of each store and based on the information obtained transfer of information to factory happens for reordering a particular product. Within 10 days, the store will receive their product after adjustments from sales data have been made.

Role of technology in Uniqlo Supply Chain

Before these solutions were implemented, Uniqlo had a hard time in managing their supply chain. They were having production, distribution, and retail challenges. With globalization, Uniqlo was able to create a supply chain that made distribution and selling of its products far easier. They were able to form partnerships at a global level with companies from around the world. This was possible because of the real time information sharing abilities that Uniqlo had developed (Abernathy, 2019). They were able to get the sales data and forecast volume. Recently, Uniqlo had announced that they will be able to access and collect vast amounts of valuable data at a global level by working with Google and their artificial intelligence network. They also partnered with Accenture for using algorithm technique to make new designs. Figure 14 shows a breakdown of how technology improved their supply chain management.

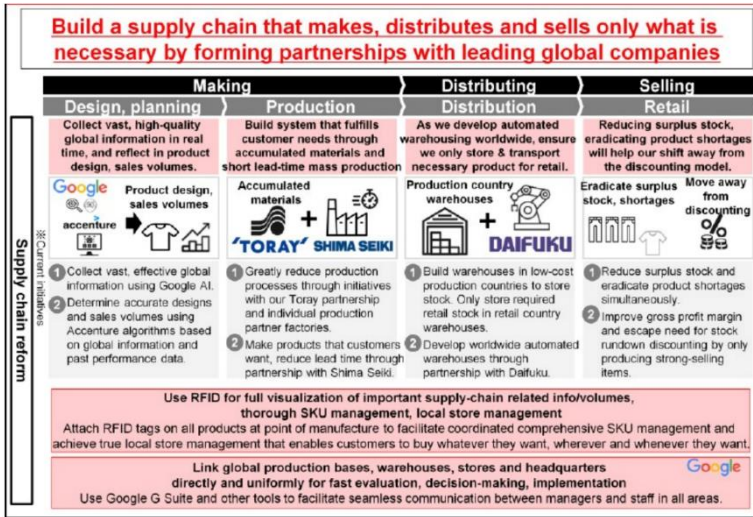


Figure 14. Uniqlo Supply Chain Management with technology

Source: Hansen, 2021

Reasons for Uniqlo's success and challenges

Uniqlo is capable of changing their supply change management strategy to a push strategy as well because most of their core activities are inhouse. They are able to stay close to the customer needs. They can monitor what customers are buying and when they are buying it. This allows the company to stop from overproducing. The stocks levels can be well maintained and overhead costs can be avoided (Nashrulla, 2021). Due to the size of their mass manufacturing, they are able to buy fabric in large quantity which gives them negotiating power. All of this means that they control the decisions related to manufacturing as they are able to anticipate the customer demands.

Their production stage of Uniqlo are worked out to ensure that lead times do not accumulate material in advance. Uniqlo ensure that they are able to reduce production processes and take initiatives to build long term partnerships with synthetic fiber manufacturers like Toray. This is all possible due to globalization as they are capable of working with partners from around the world. They recently partnered with Shima Seiki to manufacture machines which can be used for manufacturing of Uniqlo products alone (Uncles, 2020). By avoiding overstock and eradicating product shortages, Uniqlo is able to move away from traditional supply chain and business model of discounting and liquidation.

The main reason for success of Uniqlo in some markets is that the supply chain network has helped them in creating a strategic fit. The company is now capable of reaching out to the customers in any part of the world. The company is capable of understanding the customer needs to SPA model and TCM. JIT technology is being used for getting real time information from stores which helps in TCM. With use of JIT, Uniqlo is able to understand what the customers are looking for and where they are looking for it (Craig, 2020). If the customer finds a product attractive then they make the sale or else Uniqlo takes the design back and improves it for a quick turnover.

One of the main challenges for Uniqlo is the rising competition from other brands. Although, Uniqlo has developed its own Supply Chain Management process to meet the demands of their market segments but figure 15 clearly shows that they have been lacking behind as compared to other clothing manufactures in the market (Xuejie, 2019). These competitors are expanding in the same countries where Uniqlo is also present. This is not good for the relationships that Uniqlo has established with their suppliers and customers. Ultimately which will increase the cost of production which will have an impact on the final price.



Figure 15. Speed to Market for Uniqlo Competition

Source: Mazaira, 2019

Another challenge for Uniqlo is the inclusion of technology into their value chain. When Uniqlo is expanding across the globe, they find it challenging to integrate their software according to the local needs. The partners in new countries are using technology which is not similar to what Uniqlo has been using (Warburton, 2021). This means that Uniqlo has to make extra effort in order to create a supply chain that is compatible with the technological needs of their partners. Or else, they cannot foster the same mentality of lower cost and high-quality products in the foreign markets (Hines, 2021). With SPA, part of the equation is solved but it needs continuous integration of supply chain components with use of technology for managing the supply chain at a global state.

5. Comparative analysis of advantages and disadvantages of Zara and Uniqlo

The supply chain network that Zara has created enables it to react quickly to the fast fashion trends. This is one of the biggest advantages of the supply chain network that they have developed. Other companies like Gap Inc. and H&M have officially stated that they would love to imitate the value chain that Zara has created for its customers but it would mean that they have to strip their supply chain network apart and build everything from scratch which can be very costly (Abernathy, 2019). The supply chain network that Zara has created allows it to deliver the product when it is needed and wherever it is needed. The latest fashions which are famous on the street can be converted into new dresses within a week's time. This is all possible due to their supply chain management network. Another big advantage of Zara's supply chain is that they do not believe in mass production like Uniqlo. Zara only produces a limited number of quantities for each of their designs (Caro, 2019). This is one of the reasons why Zara products are rarely on sales. They produce in enough quantities to understand and manage the current demand. If a style is hit then they have production abilities to mass produce it and deliver it as fast as possible.

For Uniqlo, the Supply Chain Management is quite different than that of Zara. The application of SPA model changes the network for them. It cancels out the agents and connect the different departments like sales and production together for ordering raw material, product development, distribution, and forecasting (Kouvelis, 2019). It is like being in control of the whole product flow process. Uniqlo is in charge of planning, production, sales processes, and material procurement. Each of the elements in these phases have different links. The designs are delicate and detailed. For example, when the design process is happening at Uniqlo, it has to consider at least six to eight different aspects of information (Mahmoudi, 2021). This includes sales data, trend analysis, sales plan, material planning, product development, and design. This allows them to attach great quality and product development at the design phase. These decisions are not made by single person, instead, the whole staff works together to make informed decisions.

Uniqlo has developed their competitive positioning based on quick information flow across its supply chain network. This is one of their core competencies as well as it allows them with quick response in their supply chain. The flow of information throughout the supply chain model is necessary for managing quick response. The traditional clothing retailers do not control their store operations from the head office. For Uniqlo, this is a key different because they have developed a working relationship between the store leaders and the headquarters. This allows the headquarters to keep an accurate count of the inventory present at each of the stores (Halldorsson, 2020). The information system is used for tracking the information at each of the stores. This allows for efficient inventory management and sales

forecast that helps in creating strong Supply Chain Network based on the information provided.

Overall, there are some major differences between the supply chain network of Zara and Uniqlo. Zara is a company that does not believe in mass production of a particular design. They also have most of their production inhouse. The warehouse in Spain does the job of a quality checker as all the product is delivered through them (Craig, 2020). The supply chain network of Zara is designed in an innovative way. It is now one of their core competencies that adds to their competitive advantage across the world. The products manufactured by Zara are never sold on discounted prices. Uniqlo approach towards inventory management and production is completely different than that of Zara. Uniqlo starts manufacturing new designs almost 6 to 12 months before the start of the season (Lebbar, 2018). Their supply chain model is built around TCM and SPA mindset. Uniqlo also depends on forming strategic partnerships with data management companies for managing their supply chain. The partnered with Accenture data analysis team for building an efficient and fast distribution network in Tokyo. Uniqlo will be using the inhouse production for delivering an online and offline brand experience. It is expected that this alone will increase their sales by 30% during 2021 (Warburton, 2021). Their supply chain is going to be formed around the Omni channel as well.

6. The impact of new Chinese e-commerce retailers on Zara and Uniqlo

Sales management mode of China's e-commerce new retail enterprises

The sales management mode is basically about the process which is used for hiring, training, and motivating the sales staff. This is done for coordinating the operations across the different sales department and implementing a cohesive strategy which can drive business revenue for a company (Usui, 2018). In China, companies have now realized that they have to diversify their sales channels in order to be an effective new retail enterprise. This is mainly happening because consumers are responsive now and they want customized products and services. The logistics network that is established by different companies is now used for service specialization and shared economic model. Data and analytics are used for driving supply chain transformation and operation enhancement.

The retailers in China are now applying a differentiated strategy. The companies which are well established in the e-commerce business are now focusing on developing their offline sales channel. This is done for ensuring that they are able to give a brand experience to their loyal customers (Evans, 2019). The companies which do not have an e-commerce channel are now moving towards expanding their e-commerce in order to expand their reach to customers. Ecommerce retailers are expanding across China with help of direct channels for

reaching broader markets. One of the main strategies which is common amongst all these sales management mode utilized in China is the use of data and customer-oriented thinking. In China, such trends indicate that development of Omni channel will be inevitable for all brands. They will have to be present online and offline to provide a seamless brand experience. Companies who fail to complete such a task will be left out of the competition and they will not be able to compete in both ecommerce and brick and mortar sales channels.

For managing the sales management mode in China through a competitive supply chain, companies must understand that they need to segment their supply chain by customers. For each of these customers differentiated targets must be established. This will allow them to establish their supply chain as a winning lever which connects the brand directly with its customers (Nashrulla, 2021). Chinese ecommerce business must stop being customer oriented and they must be customer oriented. To do this, they have to look at the customer demand and utilize the business decisions which are focused on expanding sales channels and liquidizing inventory. Retailers in China must let go of the old methods and really try their best to connect with the customers. Their supply chain must be flexible and responsive in order to meet the needs of fast-moving market. Ecommerce businesses must be able to make changes when it comes to design, sourcing, inventory management, and sales channel management which is all possible through an Omni channel network.

The sales management mode of Zara and Uniqlo in the Chinese market

In Chinese market Zara has 55 stores where it has opened their boutique style shops. These are a result of extensive expansion strategy that Zara is going to adopt in China. They have anticipated that the demand in China is going to increase in coming years. The competition in China is going to increase as well because Chinese brands and local manufacturers can imitate Zara's design. As of the middle of 2021, fast fashion brands like Zara have now decided to quit their offline market channels in China (Davies, 2021). In order to compete in China, Zara has decided that they will be selling their product through ecommerce only. They will strengthen their ecommerce strategy. In China, one of the brands that gave stiff competition to Zara was SHEIN. It is a brand that competed against Zara and ensured that fast fashion products are available to Chinese consumers as fast as possible (Davies, 2021). They also developed an efficient supply chain network. In China, another reason for failure of Zara is the use 'one size fit all' strategy that they had adopted. Chinese consumer market is complex and in order to succeed in China companies need a localized approach towards their value chain. Zara failed to accommodate this trend which is resulted in their exit from China retail sector and focus on online sales only.

Uniqlo entered China in 2002 and since then it has been expanding fast. They now have about 820 retail locations in different parts of China mainland. As of 2021, they have two global

flagship stores in China as well. Now, Uniqlo has more stores in China than they have in Japan. They are aiming to reach 1000 locations in China by end of 2022 (Alice, 2021). Uniqlo demand in China has grown in recent years because it has focused on satisfying the needs of local market. For example, it saw an increase in sales during the first quarter of 2021 because the company was able to satisfy the clothing needs for stay at home orders. Their sales of jogging pants and loungewear increased exponentially as consumers liked their designs. The sales data from previous indicate that Uniqlo has been going strong in China as can be seen in figure 16. This is made possible with innovation in their supply chain. They are capable of producing fast fashion Chinese products to cater the new trends (Burgen, 2019). In China, Uniqlo clothing is famous amongst men who do not like to dress up by mixing and matching their clothes. Uniqlo provides comfortable styling to these customers with new styles. Uniqlo produces limited product stocks and call them the Hero SKUs.

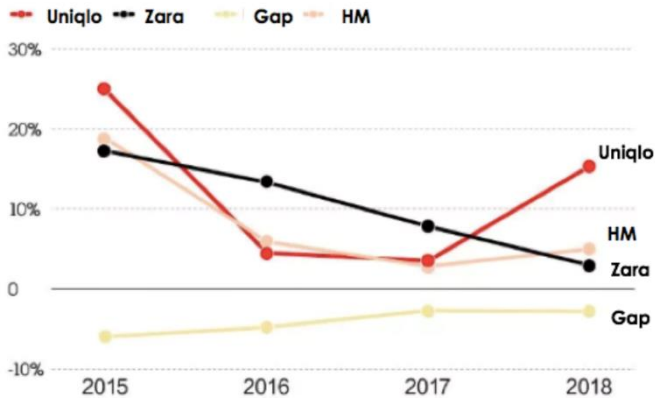


Figure 16. Sales of clothing brands in China

Source: Burgen, 2019

Suggestions and influences on future retail enterprises

The case of Uniqlo can be an inspiration for Chinese clothing retailers as Uniqlo has changed the traditional approach towards clothing. They have emphasized the importance of fast response in the supply chain through information sharing with the key players (Craig, 2020). For Chinese enterprises, this means that their supply chain networks can also be improved if they have enough level of information sharing powered by the new information technology tools. This will help them in promoting collaborative operations throughout their supply chain network. Without the use of information system, Uniqlo itself cannot perform at this level of efficiency. As of now, in China, many clothing retailers and manufacturers do not

pay attention to the basics of TCM and SPA model. They also do not use information technology for creating a network which helps them in managing information (Uncles, 2020). In China, it is possible for medium size clothing manufacturers to establish their own supply chain network that is powered by information sharing. It can be done by combining their own business needs and information sharing across the network. Doing so can lead to shorten lead times and improvements in supply chain competitiveness. POS systems in this whole scenario can play a big difference if sales data, market information, and centralized management systems are obtained. This means that they can conform to their own situation and improve the operational efficiency of their business.

Another important suggestion from Zara and Uniqlo analysis is the inventory management process. Both Zara and Uniqlo have increased their inventory turnover period through creating a unique and complex supply chain network. They both have abandoned the traditional methods of inventory management. Uniqlo adopted the TCM method for managing the flow of product throughout their supply chain. They organize meetings between the key players just like Zara (Jack, 2021). They do this to analyze the sales data, understand the market demand for forecasting, and determining the required production capacity of inventory. This information is also used for managing activities like additional orders, discounted sales, and inventory liquidation. From Zara, we can learn the same lesson and make suggestion on how to improve the inventory management systems (Davies, 2021). Companies have to cooperate with their suppliers and promote information sharing. Again, the main element for effective inventory management is sharing of information between the organizations at upstream and downstream level. All clothing companies have to pay close attention to information sharing as it can be effective in establishing their own supply chain network. This can also help in avoiding the bullwhip effect.

The clothing manufacturing brands must also look into managing their suppliers like how Uniqlo and Zara are doing it. This means that supplier management is important for supply chain management. Forming partnerships with the suppliers and manufacturers can be profitable for a clothing business as it can help in improving the response ability of a supply chain network and reduce the cost of manufacturing (Moscaritolo, 2020). As compared to Zara, Uniqlo is doing it more effectively as they have developed a screening process for their supplier. They have developed their standards for each of the suppliers with specific goals. The ideology of TCM is used during the building phases of this relationship as well. This allows Uniqlo to strictly control their production and quality management processes (McKee, 2019). Companies in China and other parts of the world can also follow Uniqlo approach of craftsman system. While deciding on the external manufacturer and outsourcing activities, a company can always obtain help from the technique experts. By doing this, clothing manufacturers can ensure that the product they produce inhouse and the product which is obtained from partners has the same quality and finish. Therefore, it is important to select a

strategic partner who can meet the requirements, pass the screening, act on the established standards, and deliver the finest product quality.

The clothing industry must not underestimate the value of technology. Since the inception of clothing industry, technology has been a key player which is helping the different companies in different aspects of their value chain. In case of both Zara and Uniqlo, numerous technologies like JIT, AI, RFID, POS, meeting software, virtual experience, internet of things etc. are all being used by the companies (Stossel, 2019). The use of technology enables information sharing which helps in improving the response time of a company. Without using technology in retail clothing sector, communication, coordination, and cooperation between the key stakeholders is extremely difficult (Mazaira, 2019). For example, the marketing specialists from Zara or the craftsman team from Uniqlo cannot function properly. They will have no access to information which can disrupt the whole supply chain of these companies. With technology, companies can assort their inventory throughout the supply chain process like how Zara and Uniqlo does it (Doeringer, 2020). They can track their shipment and provide real time information to end users. The pricing of an item can be tracked in different areas for placement of raw material orders. Through providing good tracking tools, customer satisfaction and supplier relationships can be strengthened. In short, other companies must incorporate technology in their supply chain management processes as well because it helps in improving planning and superior decision making.

7. Conclusion

In China and other countries, traditional clothing retail systems have changed exponentially due to globalization. Before, brands were inventory and company focused throughout their value chain. The product flow was one directional with no information sharing between the key stakeholders. In recent years, as the living standards of people improved and consumers have access to various forms of information, it forced the companies to move from inventory centered mindset to consumer centered mindset. This change was important because the consumer demands were changing. If companies did not accommodate such trend into their supply chain management techniques then they could never offer value to the customers. This led a change in traditional retailing network across the globe.

In clothing industry, managing the bullwhip effect, stockouts, quick response, inventory turnover, cross docking, technology integration etc. are some of the key performance indicators. The introduction of Omni channel made the role of supply chain more important than ever before. Brands had to maintain their online presence along with their offline activities in order to provide a seamless experience to the end users. The introduction of Omni channel changed the traditional mode of retailing and allowed the companies to invent their

own supply chain networks. For this to happen, communication between different stakeholders and use of technology was critical.

Zara is one of the companies which has revolutionized its supply chain management in every aspect. Their supply chain network work in a way that information is shared at every step. The store leaders provide information to designers who then work with marketing specialists for procurement and sourcing purposes. They have developed inhouse and outsource operations. All the products are distributed from their central location in Spain. It allows them to maintain their quality standards and deliver exceptional customer experiences. They are capable of producing in small quantities and then producing a hit design in mass quantities as way for managing their inventory. This is all done through a vertically integrated supply chain which is focused on direct distribution of the product.

Uniqlo is one of the competitors of Zara that has a completely opposite approach. Zara works in four to six weeks to bring new designs to their stores. Uniqlo works six to twelve months in advance to bring their 'Hero SKUs' to the end users. Uniqlo is growing fast as a fast fashion retailer network because they are more focused on delivering limited fast fashion in mass quantities. They are exploring the different possibilities across the world and expanding faster than their counterparts. They are also focused on developing their Omni channel as they have recently partnered with data management companies like Google and Accenture for using algorithms to predict new designs and manage their sales data more efficiently. The success of Uniqlo in China has driven Zara out of business in China which shows the effectiveness of their strategy in a big consumer market.

Technology, inventory management, logistics planning, and customer focus are the key elements which allow a brand to be successful in the clothing market. Brands from other countries must learn from the examples of Zara and Uniqlo and create their own supply chain network which is powered by technology. Doing so, will allow them be more customer responsive. Companies who learn about their customers are then able to develop a supply chain for their business is focused on product improvement, overcoming risks, and building a strong relationship with key stakeholders. Both Uniqlo and Zara are an example of this because they have dominated different markets with help of their supply chain. Both companies are innovating their supply chain and in years to come competition amongst them can even intensify.

8. Bibliography

- [1] Cutler, A. (2019) Identifying antecedents of information exchange within supply chains. *International Journal of Physical Distribution and Logistics Management*, 32 (9), pp. 755-770. <https://doi.org/10.1108/09600030210452431>
- [2] Gunasekaran, E. (2019) Systems in supply chain integration & management *European Journal of Operational Research*, 159 (2), pp. 269-295. <https://doi.org/10.1016/j.ejor.2003.08.016>
- [3] Ha, T. (2018) Designing Crowdsourced Delivery Systems: The Effect of Driver Disclosure and Ethnic Similarity, *Journal of Operations Management*, 30 (1), 19-33. <https://doi.org/10.1016/j.jom.2018.06.001>
- [4] Haag, S. (2019), *Management Information Systems for the Information Age* (3rd Canadian Ed.), Canada: McGraw Hill Ryerson ISBN 0-07-281947-2
- [5] Halldorsson, A. (2020). Complementary theories to supply chain management. *Supply Chain Management*, Volume 12 Issue 4, 284-296. <https://doi.org/10.1108/13598540710759808>
- [6] Jacobs, K. (2019). Yada, yada, yada... successful business! using Seinfeld clips to teach business model evaluation. *Journal of Entrepreneurship Education*, 22(2), 1-7.
- [7] Kouvelis, P. (2019): Supply Chain Management Research and Production and Operations Management: Review, Trends, and Opportunities. In: *Production and Operations Management*, Vol. 15, No. 3, pp. 449-469. <https://doi.org/10.1111/j.1937-5956.2006.tb00257.x>
- [8] Larson, P. (2020). Logistics versus supply chain management: an international survey. *International Journal of Logistics: Research & Application*, Vol. 7, Issue 1, 17-31. <https://doi.org/10.1080/13675560310001619240>
- [9] Lebbar, M. (2018). Quick response in fast fashion retail: An optimization supply chain responsiveness model. In 2018 4th International Conference on Optimization and International Journal of Science and Research, 5(4), 1242-1248.
- [10] Li, S. (2019). Development and validation of a measurement instrument for studying supply chain management practices. *Journal of Operations Management*, 23 (6), pp. 618-641 <https://doi.org/10.1016/j.jom.2005.01.002>
- [11] Mahmoudi, A. (2021). Sustainable Supplier Selection in Megaprojects: Grey Ordinal Priority Approach. *Business Strategy and the Environment*. 30: 318-339. <https://doi.org/10.1002/bse.2623>
- [12] Mazaira, A. (2019). The role of market orientation on company performance through the development of sustainable competitive advantage: the Inditex-Zara case. *Marketing Intelligence & Planning*, 21(4), 220-229 <https://doi.org/10.1108/02634500310480103>

- [13] Mentzer, M. (2019) Logistics Service Quality as a Segment-Customized Process, *Journal of Marketing*, 65 (4), 82-104. <https://doi.org/10.1509/jmkg.65.4.82.18390>
- [14] Mirzaee, H. (2020). A preemptive fuzzy goal programming model for generalized supplier selection and order allocation with incremental discount. *Journal of Computers & Industrial Engineering*, 122, 292-302. <https://doi.org/10.1016/j.cie.2018.05.042>
- [15] Norris, M., & West, S. (2019). *EBusiness Essentials: Technology and network requirements for mobile and online markets*. J. Wiley.
- [16] Todo, Y. (2019). The strength of long ties and the weakness of strong ties: Knowledge diffusion through supply chain networks" (PDF). *Research Policy*. 45 (9): 1890-1906. <https://doi.org/10.1016/j.respol.2016.06.008>
- [17] Usui, T., (2018). A dynamic process of building global supply chain competence by new ventures: The case of Uniqlo. *Journal of International Marketing*, 25 (3), 1-20. <https://doi.org/10.1509/jim.16.0052>
- [18] Wang, N. (2018). An Analysis of Uniqlo's Management Philosophy and Its Enlightenment to China's Fast Fashion Brands. *Open Journal of Social Sciences*, 6(03), 301. <https://doi.org/10.4236/jss.2018.63022>
- [19] Warburton, R. (2021). Questioning the relentless shift to offshore manufacturing. *Supply Chain Management: An International Journal*, 7(2), 101-108. <https://doi.org/10.1108/13598540210426659>

The impact of COVID-19 pandemic in freight forwarding and international relocations industries

Krisztina Barta

Abstract

It has been reported globally that the entire freight forwarding industry is facing a severe disruptions since the start of COVID-19 pandemic. It has created a ripple effect supply chain crisis all across the globe. This is unfortunately an industry phenomenon that is impacting every industry and sector, including international relocations of household goods and personal effects. Apart from lack of availability of cargo space, long delays, schedule changes and last minute re-routings have become a common occurrence, while global ports deal with port congestion and backlogs as a result of COVID-19 closures. Ships are sometimes stuck outside ports for weeks awaiting clearance to dock, unload and reload their cargo while some routes have even been suspended indefinitely.

***Kulcsszavak:** international relocation, freight forwarding, pandemic, congestion, container shortage, ocean freight*

1. Introduction

International relocations, however small sub-branch of logistics, are just as complex. It is not enough, for example, to know only one transportation mode and gain great experience in it. If I want to be precise, it is by no means enough having experience in certain sub-sectors of logistics to arrange an international relocation.

The relocation of household goods and personal effects is a very sensitive and demanding task. Who would not have a personal item in their home that they are very attached to, which is irreplaceable? Something that seems worthless to others, but invaluable to the individual. It is always recommended to customers to take the priceless and irreplaceable items with them during their trip, whenever it is possible. Of course, this is not always feasible, as such an object can even be a piece of furniture or a painting, which is quite difficult to check in as luggage on a flight.

The international relocation itself is not too complicated process:

- Pre-move survey

- Preparation and acceptance of quotations
- Full international packing and dismantling of furniture
- Loading of household goods and personal effects from residence at origin
- Export customs clearance
- International freight (via air or via surface)
- Import customs clearance
- Delivery to the residence
- Unloading of household goods and personal effects to residence at destination
- Full unpacking and reassembling of furniture
- Removal of used packaging material (debris) on the day of delivery

However, an international relocation is not always that easy. Relocation of two similarly sized shipments in the same relation can also generate two completely different problems. There is never time to get bored, due to the complexity of international removals, a lot of processes have to be coordinated at the same time in order to make sure that the customers feel as little as possible of any problems that may arise during their door-to-door move.

2. At the beginning of COVID-19 pandemic in 2020

In the spring of 2020, governments put their countries or parts of their countries under lockdown one after the other. No one knew the new "enemy" we were facing and how long the closures would last. Everyone was just guessing what would happen next.

Multinational companies have temporarily suspended the business travels for their employees. Business conferences were cancelled. Companies temporarily frozen their recruitments from foreign countries, but some people, although they had a signed contract, were unable to show up at their new (foreign) duty station due to travel restrictions. Business travels were permanently affected by the pandemic with employees living in new locations creating different travel patterns.

In the international relocation industry, life has come to a standstill. As multinational companies suspended or postponed the recruitments of foreign workers, the international removals were also postponed. The already planned moves were also cancelled by the customers, from one side they could not travel at the desired time, and on the other hand they were afraid to let the moving crew into their homes because they were fearful that they would become infected with the unknown virus.

In addition to the sequential removals cancellations, the industry has had to face with new problems. Although the shipments in route during the lockdown reached the airport or seaport of destination, they did not make it any further there because the Grand Handling Agents at the airports or the Port Agents at seaports or the Customs Authorities either did not work or

their working hours were drastically reduced. There were also destinations where the ships were not allowed to dock, so that although the vessels reached their destinations, waited around the ports for weeks, whereupon the authorities allowed the ships to dock. Expediently it generated tremendous port congestions and backlogs at sea- and airports.

As shipping lines were unable to empty their containers on time that resulted container shortages relatively quickly around the world. Delays, re-routings and increased transit times have generated additional charges that neither the shipping companies nor the port agents have taken on. Thus, if someone wished to collect their shipment, they had to pay the excessive demurrage and port charges first.

Due to delayed deliveries, there has been a shortage of all kind of commodities around the world. Let's just remember the toilet paper shortages at the start of lockdowns. On one hand, with the closure of offices, the need of households has increased, at the same time, the demand for larger rolls used in offices has decreased. The market was quite slow to react due to transport difficulties and delays, resulting in a rapid shortage, which was also contributed to by people's hysterical acquisition. Another great example is the deficiency of microchips that is still not solved.

Airlines and shipping lines are prioritizing the commodities when accepting booking for freight. Medicines, vaccines, blood samples, perishables, foodstuff always had priority, while household goods and personal effects consistently had least priority. During the pandemic the gap has just widened, there were periods and relation when and where it was almost impossible to book sea- or airfreight for household goods and personal effects. As a consequence, shipping fees both via air and via surface in the international relocations industry have significantly increased.

3. The story continues in 2021

Congestion at ports around the world has meant that only 40% of container ships arrived on time in the first quarter of 2021 according to the reports released.

Based on Sea-Intelligence reports the transit time significantly increased to Asian, European and even to US seaports. Normally the sea transit time is fourteen days from Shanghai to Long Beach port, however in 2021 the time increased to over thirty days. It does not mean that the sailing time has increased, it is the same, and however, vessels spend twice the time waiting to be unloaded (Sea-Intelligence, 2023).

Hapag-Lloyd have been diverting its ships to less-congested ports and has bought an extra 450,000 containers since 2020 to add to their capacity. Hapag-Lloyd reported the congested supply chains present a huge challenge to all market participants. In the middle of 2021,

Hapag-Lloyd ordered 6 more 23,500 TEU (twenty-foot equivalent units) ships. “The German shipping line said announcement the new container ships will be outfitted with a state-of-the-art high-pressure dual-fuel engine that will be extremely fuel efficient. Their engines will operate on LNG but the vessels will also have sufficient tank capacity to operate on conventional fuel as an alternative” (Freight Waves, 2023).

The Federal Maritime Commission (FMC) in the United States has signed an agreement with the antitrust division of the Department of Justice, as the Biden administration attempts to prevent anti-competitive behavior. Predictably the agreement will increase oversight of foreign ocean carriers that serve American international container trade lanes. The government has encouraged the FMC "to take all possible steps to protect American exporters from the high costs imposed by the ocean carriers" and to "crack down on unjust and unreasonable fees, including detention and demurrage charges" (Competition Policy International, 2023).

In the summer of 2021, European companies involved in international relocations encountered difficulties from increasing ocean freight costs and a shortage of shipping capacity as they attempt to overcome travel and visa restrictions that have impacted the market over the last twelve months. In addition, finding space on a vessel for household goods and personal effects is causing further delays in shipping. The relocation companies reporting up to 6-8 weeks lead time to secure a booking on a ship bound almost to any destinations (Fédération Internationale des Déménageurs Internationaux, 2023).

In the fall of 2021, international relocations companies experienced further pressure as ocean carriers start to reduce the amount of import container free time at North European ports.

Importer corporations, struggling with congested ports from Le Havre to Hamburg and a shortage of container trucking, are receiving little or no notice about the reduction in free time (the period that a container is allowed to remain in the port before incurring port storage, detention and demurrage charges). According to the Shipping lines the reduction in free time at ports provides motivate to take delivery of shipments more expeditiously.

The situation was even more critical in the United Kingdom where Evergreen Shipping Company informed the shippers that with immediate effect, the free time at the Port of Southampton reduced from seven days to five (The Load Star, 2023).

4. Present situation

Regrettably, the circumstances in the relocations industry did not significantly change in 2022. Challenges remained for international relocations companies. Industry news were

coming regularly from different parts of the world to keep the international relocations companies in the loop.

“The Port of Long Beach set another new single-month record in April as the port continues to clear marine terminals of cargo ahead an expected new wave of imports in the coming months as China opens up from COVID-19 lockdowns.

Dockworkers and terminal operators at the port moved 820,718 twenty-foot equivalent units (TEU) worth of container cargo last month, up 10% from the previous monthly record set in April 2021. April now marks the fourth month in a row that the Port of Long Beach has set new monthly cargo records” (G Captain, 2023).

The United States Federal Maritime Commission has approved a settlement that will force Hapag-Lloyd to pay a 2 million US dollar civil penalty for their detention and demurrage practices.

“We must ensure powerful ocean carriers obey the Shipping Act when dealing with American importers and exporters. The case that was concluded today is just part of an ongoing effort to investigate any conduct alleged to violate FMC rules – and in particular, the interpretive rule on detention and demurrage charges,” commented the chairman of Federal Maritime Commission, Daniel Maffei (Shipping and Freight Resource, 2023).

According to Maersk (the world No. 1 container shipping company), the ocean freight costs has increased with average 25-30 percent since the start of the pandemic.

“Logistics is very energy and labour intensive, and those are two of the areas of the economy that are subject to significant inflationary pressure” (Reuters, 2023).

4.1. Comparison of ocean freight rates

I have prepared the below table to demonstrate the increase in ocean freight rates from Asia to Europe. I have compared 20’ and 40’ FCL (full container load) charges for Laem Chabang, Thailand/Naples, Italy relation.

Table 1 – Comparison of Ocean Freight Rates 2019-2022

Laem Chabang port, Thailand - Naples port, Italy		
40' box container		
<i>Ocean freight rate</i>	<i>Currency</i>	<i>Date</i>
3,020	USD	August, 2019
10,880	USD	March, 2021
13,972	USD	August, 2021
15,950	USD	June, 2022
20' box container		
<i>Ocean freight rate</i>	<i>Currency</i>	<i>Date</i>
2,195	USD	August, 2019
7,925	USD	July, 2021
9,025	USD	September, 2022

Source: own data collection and editing

The table properly indicates that the ocean freight rates for containers from Asia increased not only with 25-30 percent, but the current rates are 4-5 times higher than before the pandemic.

The situation is similar in South Korea, the current charges shows 400% increase in 2022 compared to 2019.

Table 1 – Comparison of Ocean Freight Rates 2019-2022

Incheon port, South Korea - Naples port, Italy		
40' box container		
<i>Ocean freight rate</i>	<i>Currency</i>	<i>Date</i>
3,460	USD	October, 2019
3,550	USD	October, 2020
16,345	USD	July, 2021
14,400	USD	April, 2022
14,400	USD	May, 2022

Source: own data collection and editing

In the meantime, there are areas where there is no drastic increase in the ocean freight rates, but only the said 25-30%. Please see Chile as an example:

Table 2 – Comparison of Ocean Freight Rates 2019-2022

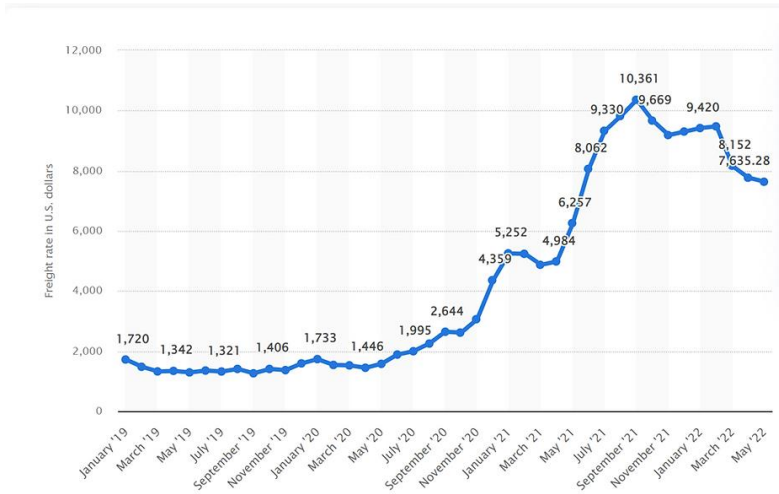
San Antonio port, Chile - Naples port, Italy		
40' box container		
<i>Ocean freight rate</i>	<i>Currency</i>	<i>Date</i>
2,210	USD	January, 2019
1,592	USD	December, 2019
1,930	USD	November, 2020
2,093	USD	July, 2021
2,650	USD	February, 2022
20' box container		
2,000	USD	July, 2018
2,000	USD	August, 2019
2,050	USD	December, 2020
2,070	USD	November, 2021
2,550	USD	July, 2022

Source: own data collection and editing

4.2. Statistics

“In the third quarter of 2021, main container shipping companies had an average profit margin of over 56 percent, up from about 8.5 percent two years earlier. Some of the carriers are using these profits to increase their carrying capacity by buying new containers and ordering new container ships. However, delivering newly ordered ships is still years away” (Statista, 2023).

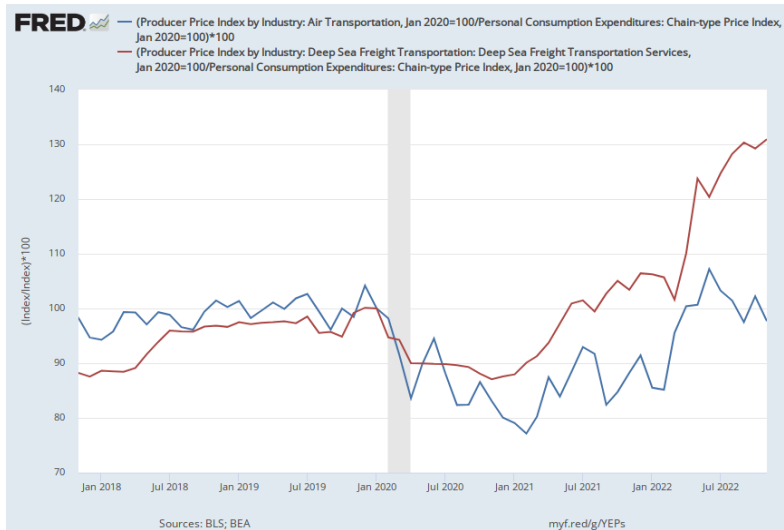
Table 3 – Global container freight rate index from January 2019 to November 2022



Source: Statista

The below FRED graph shows deep sea freight and air freight price indexes. The price indexes demonstrate the growth in the real price of shipping.

In March 2020, when the pandemic hit the world, first the indexes decreased, but then both indexes started ascending. In the middle of 2021 the deep sea freight index incremented above air transportation. By middle of 2022, the air transportation index recurrence to pre-pandemic altitude, while regrettably, the price of deep sea freight remains enhancing (FRED Economic Data, 2023).

Table 4 – Producer Price Index January 2018 - July 2022

Source: Fred Blog

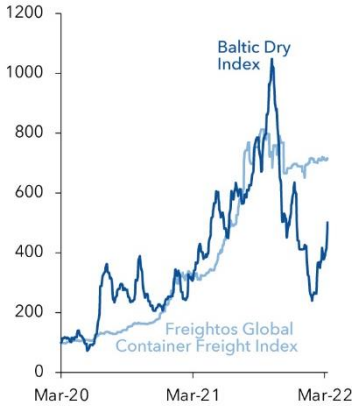
According to the study of IMF "shipping costs are an important driver of inflation around the world: when freight rates double, inflation picks up by about 0.7 percentage point. Most importantly, the effects are quite persistent, peaking after a year and lasting up to 18 months. This implies that the increase in shipping costs observed in 2021 could increase inflation by about 1.5 percentage points in 2022". The study also point out that the increase of shipping costs affect inflation in some countries more than others. Countries, whose consumption is more from importing goods than own produce face greater inflation (International Monetary Fund, 2023).

Table 5 – Shipping cost indexes March 2020-March 2022

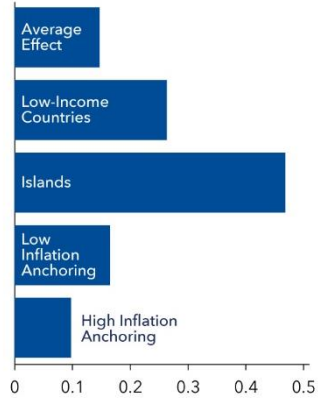
Cargo crunch

Global shipping costs surged during the pandemic, and are likely to continue boosting inflation through year-end.

Shipping costs
(indexes; March 1, 2020=100)



Inflation effects 12 months after shipping costs increase
(percentage point)



Sources: Haver Analytics and IMF staff calculations.
Note: The right panel is based on estimates in Carrière-Swallow and others (2022), and presents the impact of a one standard deviation increase in world shipping costs (+21.8 percentage points) on domestic headline inflation after 12 months.



Source: IMF Blog

According to United Nations Conference on Trade and Development (UNCTAD), transport charges are significant part of trade costs, therefore the continuous increase of freight charges raise difficulties to the world economy (United Nations Conference on Trade and Development, 2023).

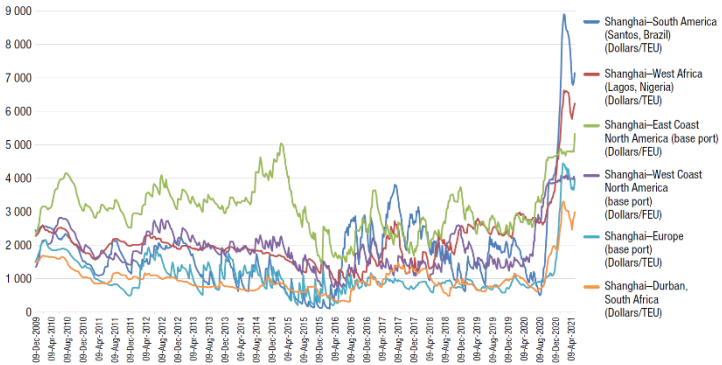
80 percent of the world's consumption is shipped via sea, as a consequence the charges of a container freight influence on global trade. At the beginning of the pandemic the demand for container shipping decelerated for a short while, but then had a massive growth (United Nations Conference on Trade and Development, 2023).

"Currently, rates to South America and western Africa are higher than to any other major trade region. By early 2021, for example, freight rates from China to South America had

jumped 443% compared with 63% on the route between Asia and North America’s eastern coast" (United Nations Conference on Trade and Development, 2023).

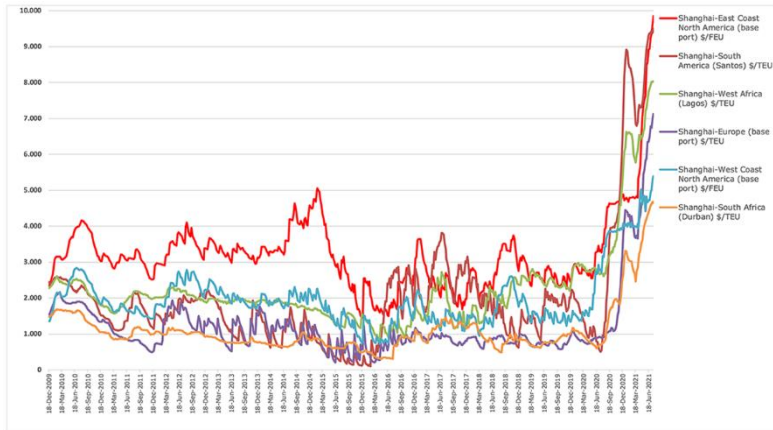
The lack of return consignment explains the main reason of the extensive increase as it is very costly to ship the empty containers back to China (United Nations Conference on Trade and Development, 2023).

Table 6 - Shanghai containerized freight index, weekly spot rates, 18 December 2009 – 9 April 2021



Source: UNCTAD

**Table 7 - Shanghai Containerized Freight Index (SCFI), weekly spot rates. 18
December 2009 to 23 July 2021, selected routes**



Source: UNCTAD

4.3. The International Federation of International Movers (FIDI)

The International Federation of International Movers, in French: Fédération Internationale des Déménageurs Internationaux (FIDI), is based in Zaventem, Belgium. FIDI is the largest global federation of international relocation companies, with members in more than 100 countries. FIDI members have one thing in common, and that is the high quality of service, which they can prove. FAIM – FIDI Accredited International Mover – is a quality label that is mandatory for all FIDI members. The strictest and most comprehensive quality standard for the international removals sector, regularly audited by an independent third party, Ernst & Young (Fédération Internationale des Déménageurs Internationaux, 2023).

Like any industry, the international relocations industry is constantly changing. The FAIM program has been developed for nearly 25 years and is constantly evolving to meet the current needs of the industry. Certified members must not only meet operational requirements related to quality of service and supply chain management, but also ought to be financially and organizationally stable (Fédération Internationale des Déménageurs Internationaux, 2023).

In addition to certification, FIDI provides several services:

- FIDI Academy
- FIDI Conference
- FIDI Payment Protection Plan
- FIDI Charity
- FIDI 39 Club (Fédération Internationale des Déménageurs Internationaux, 2023)

4.3.1. FIDI Conference in 2022

In 2022, FIDI held their annual conference in Cannes, France. The members discussed the current situation and forecast of the industry.

FIDI reported that the invasion of Ukraine opened a region that was just emerging from the pandemic. “The moving business started to develop after COVID and clients started again to plan expansions into new locations”. However, following the invasion, “investments are on hold; nobody dares to decide as the situation is very fluid”. With the war expected to continue for some time, companies in countries impacted by the conflict are moving from short-term emergency relocation needs to meeting longer term solutions, with more global companies requesting long-term assistance including work and residence permits, school assistance and housing (Fédération Internationale des Déménageurs Internationaux, 2023).

4.3.2 FIDI has written to the European Commission

Brussels-headquartered international moving federation, FIDI, has written to the European Commission to demand a review of its competition regulations for container shipping.

FIDI and IAM (International Association of Movers) representing numerous international moving and relocation industry associations have urged the European Union to review the practices of the container shipping industry against the European Union Consortia Block Exemption Regulation.

The European Union regulation removes container shipping lines from many of the competition law checks and allows them to exchange commercially sensitive information to manage the number and size of ships deployed and the frequency and timing of sailings on trade routes around the world (Container News, 2023).

According to FIDI, European businesses have suffered huge disruption to the movement of goods by container shipping with many sailings being cancelled or diverted to other ports. At the same time shipping rates remain 3 to 4 times higher than before the pandemic.

The letter to the European Commission points to the example of the recommendations by the Federal Maritime Commission in the United States that resulted in the new Ocean Shipping Reform Act (Fédération Internationale des Déménageurs Internationaux, 2023).

5. Conclusions

Unfortunately, with the continued impact of the pandemic, the situation in the airfreight and shipping sectors remain instable and uncertain; air and shipping operations have been severely disrupted, with reduced frequencies, airport and port congestions, containers and equipment shortages causing a ripple effect and resulting in huge backlogs and price increase all across the world.

The increase of ocean freight charges made the international relocations considerably expensive that employers needs to swallow. For example, if a newly recruited staff member lives in Bangkok and relocating to Rome, the organization needs to cover the charges of the relocation in this relations despite the fact that the ocean freight charges have increased with 4-500% in that area. The company would not decide to hire someone from Chile, only because the ocean freight rates in South America are less expensive.

The transportation charges always had an impact on the inflation. In case transportation charges are more expensive, the retailer price of the products are increasing, because the entry price of the product is also enhancing.

Furthermore, the current Ukraine-Russia war will lead to further difficulties in supply chains that could maintain the ocean freight charges together with their inflationary effects higher for longer period.

Bibliography

- [1] Competition Policy International. (2023, 01 09). Retrieved from Biden Seeks To Boost Rail, Sea Shipping Competition: <https://www.competitionpolicyinternational.com/biden-seeks-to-boost-rail-sea-shipping-competition/>
- [2] Container News. (2023, 01 04). Retrieved from Container industry calls for review of EU competition rules: <https://container-news.com/the-container-industry-is-calling-for-a-review-of-eu-competition-rules/>
- [3] Fédération Internationale des Déménageurs Internationaux. (2023, 01 15). Retrieved from FIDI Focus: <https://www.fidifocus.org/news/>
- [4] Fédération Internationale des Déménageurs Internationaux. (2023, 01 06). Retrieved from International Federation of International Movers: [fidi.org](https://www.fidi.org)
- [5] Fédération Internationale des Déménageurs Internationaux. (2023, 01 02). Retrieved from FIDI Conference: <https://www.fidi.org/about-fidi/fidi-services/fidi-conference>
- [6] Fédération Internationale des Déménageurs Internationaux. (2023, 01 13). Retrieved from FIDI Focus: <https://www.fidifocus.org/news/fidi-joins-pan-industry-call-for-action-on-shipping-operations/>
- [7] FRED Economic Data. (2023, 01 16). Retrieved from The swell of shipping costs: https://fredblog.stlouisfed.org/2022/12/the-swell-of-shipping-costs/?utm_source=series_page&utm_medium=related_content&utm_term=related_resources&utm_campaign=fredblog
- [8] Freight Waves. (2023, 01 17). Retrieved from Hapag-Lloyd orders 6 more 23,500-TEU ships at cost of \$852M: <https://www.freightwaves.com/news/hapag-lloyd-orders-6-more-23500-teu-ships-at-cost-of-852m>
- [9] G Captain. (2023, 01 09). Retrieved from Port of Long Beach Continues Record-Setting Streak and Warns of Cargo Surge When China Reopens: <https://gcaptain.com/port-of-long-beach-continues-record-setting-streak-and-warns-of-cargo-surge-when-china-reopens/>
- [10] International Monetary Fund. (2023, 01 20). Retrieved from IMF Blog - How Soaring Shipping Costs Raise Prices Around the World: <https://www.imf.org/en/Blogs/Articles/2022/03/28/how-soaring-shipping-costs-raise-prices-around-the-world>
- [11] Reuters. (2023, 01 03). Retrieved from UPDATE 2-Maersk sees no let up in surging cost of shipping goods: <https://www.reuters.com/article/europe-food-conference-maersk-idAFL1N2Y90UZ>
- [12] Sea-Intelligence. (2023, 01 15). Retrieved from Analytical Reports: <https://www.sea-intelligence.com/services>

- [13] Shipping and Freight Resource. (2023, 01 02). Retrieved from Federal Maritime Commission notches another victory in empty container detention case – Hapag Lloyd to settle: <https://www.shippingandfreightresource.com/federal-maritime-commission-notches-another-victory-in-empty-container-detention-case-hapag-lloyd-to-settle/>
- [14] Statista. (2023, 01 07). Retrieved from Monthly container freight rate index worldwide 2019-2022: <https://www.statista.com/statistics/1250636/global-container-freight-index/>
- [15] The Load Star. (2023, 01 05). Retrieved from New shock for importers as shipping lines cut box free-time, despite haulier shortage: <https://theloadstar.com/new-shock-for-importers-as-shipping-lines-cut-box-free-time-despite-haulier-shortage/>
- [16] United Nations Conference on Trade and Development. (2023, 01 18). Retrieved from Shipping during COVID-19: Why container freight rates have surged: <https://unctad.org/news/shipping-during-covid-19-why-container-freight-rates-have-surged>

