

**BARRIERS TO THE BUSINESS FUNCTIONING OF THE
DOMESTIC COURIER INDUSTRY IN
SRI LANKA**



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**Research submitted in partial fulfillment of the requirements for the degree of
Master of Business Administration in Supply Chain Management**

Department of Transport and Logistics Management

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ABSTRACT

A supply chain interconnects the global and local partners, suppliers, organizations in strategic level. Knowledge of supply chain management is becoming wisdom in future trends, forecasting, and providing the competitive edge in an organization's success. Logistics plays the vital part in moving tangible movements, information, and cash on upward and backward in the entire supply chain. Logistics is accountable for all sorts of movements of goods in all modes of transportation and sizes.

As one of the main players in the logistics industry, domestic courier services are connecting the rural economies to urban and the urban businesses to rural. Domestic courier services directly and indirectly help and assure the safe, reliable speed movements of business and personal goods. It helps its customers to focus on their core business activities and take the responsibility of connecting the last mile deliveries. Due to the development of e-commerce, domestic courier services adding value to collecting the cash sales and the reverse logistics part as well.

This research identified the barriers to business functioning of the domestic courier industry in Sri Lanka. Further it describes the importance of the domestic courier industry in Sri Lanka. Additionally, the need for standardized, united and the competitiveness of the domestic courier industry in Sri Lanka. This study was initially conducted by interviewing the domestic courier industry experts, getting the relevant information from the management level staff in the domestic courier industry through questionnaire. Collected information was transformed into a data set. Then data has been analyzed by using Principle Component Analysis in Exploratory Factor Analysis Method.

Key words: Supply chain Management, Logistics management, third party logistics, domestic courier industry.

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LIST OF ACRONYMS

CEP: Courier, express and parcel

HR: Human resource

UPS: United parcel services

FedEx: Federal express

ICT: Information and communication technology

COD: Cash on deliveries

POD: Proof of deliveries

EC: Economic barriers

FC: Financial barriers

OC: Operational barriers

HR: Human resource barriers

TC: Technological barriers

RC: Regulatory barriers

SC: Social barriers

EV: Environmental barriers

CS: Customer service barriers

TH: Threat from other industries

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CHAPTER ONE

1.0 INTRODUCTION

Nations with efficient coordination frameworks have phenomenal oceanic transportation frameworks, street frameworks, streams, and rail frameworks Zuraimi et al, (2013). These frameworks form the logistical networks connecting global production and consumption units. With the increase in international trade along with technological advancement courier industry, along with international maritime and air transportation, has developed in steady phase as most of the traditional postal companies failed to keep up with the changing consumer preference (Damithri, (2019). This led to the emergence of global courier players like FedEx & UPSDHL & TNT. At the same time, the market saw the entry of domestic courier companies to engage in delivering parcel and trade item with the local economy gaining popularity in the advent of online trading and purchasing activities proliferated. Domestic courier industry has now been playing an important role to connect the rural village to the towns and cities to international cities, both in developed and developing nations. Delivering products, mails from local manufacturer, corporate, banks, government offices to consumers in all parts of the country and then to the rest of the world. Domestic courier companies operate the most difficult part of the entire supply chain, due to direct connections with the customers, handling last mile delivery that needs more flexibility and agility.

Core responsibility of the courier service is delivering time specific, safe, value-added door to door service with cash and information flow has to be communicated upstream and downstream. Courier services can be divided by local, international, weight, volume, time specific deliveries, cash on deliveries and other customized deliveries. A domestic courier service is which moves smaller freight, mail, express deliveries from point A to point B; Hub and Spoke module mostly by walk, bike, van, trishaw, and truck which comes under branch of logistics services.

Domestic courier industry serves corporate clients, SMEs and personal clients, corporate clients such as banks, apparel industry, insurance companies, shipping, freight forwarding companies, government institutions, NGOs and international trading companies. Domestic courier industry provides special services to SMEs who need to promote their products to the local markets. Many SMEs are transforming their businesses to e-commerce platforms which are in much need

of the domestic courier services. In addition to those individuals who send mails, personal items, gifts and e-commerce products use domestic courier services.

Sri Lanka is strategically located in a position where it can transform itself as an emerging logistics hub in the Asian region. Sri Lanka's geographical location can be the ideal place for logistics businesses. Sri Lanka consists of more than 100,000 km paved roads: 1447 km national rail network, six seaports, five international airports, twelve domestic airports and twenty water domes (Sri Lanka Export Development Board, 2021). Due to rapid growth of the e-commerce business, new avenues have given more potential for the courier industry. Domestic courier industry has started its full potential in terms of all areas after the end of the civil war in 2009 (Abeyratne, (2017)). Domestic courier business has been broadening their functional region after the finish of the war in Sri Lanka. Furthermore, emerging online businesses have offered more business chances for the domestic courier business. However, the domestic courier industry is facing many barriers and constraints (reference). This research was carried out to identify the barriers to the functioning of the domestic courier industry in Sri Lanka.

1.1 Research problem

Sri Lanka's geographical location and government's global logistics hub strategy can bring many benefits for the economy. The government's global logistics hub strategy includes developing port industry capacity and inland transportation network to facilitate global shipping and cargo transportation domestically that will attract foreign direct investment in the manufacturing sector. Further, the local logistics activities help value propositions of the manufacturing sector output by way of providing efficient cost-effective logistics solutions to reach the output to global market. Sri Lanka's domestic courier industry can also contribute to development of the local and rural economy by way of providing delivery service and facilitate urban, sub urban, and rural communities to reach the market at a cheaper cost. Over last decade, there has been a substantial growth in the number of domestic courier service provider. However, courier companies demonstrate lack of competence compared to the high standards e-commerce industry in the world, (Karunaratne, (2020)). Sri Lanka is far away from building a strong and sustaining local logistics industry. This research is to find out the barriers to the functioning of the domestic courier industry in Sri Lanka.

1.2 The main objective of this research

The overall objective of this research is to identify the barriers to the business functioning of the domestic courier industry in Sri Lanka from the managerial perspective and to propose ways to minimize those barriers to increase its efficiency in terms of operation, delivery, financial and worker performance.

1.3 Scope of the research

The scope of this research entails Sri Lanka's courier industry, and the domestic courier industry's key players and their capacity and gathering data from domestic courier companies and identifying the barriers for the functioning of the business of the domestic courier industry.

1.4 Significance of the study

The ultimate goal of this research is to demonstrate the need for standardizing and recognizing the value of Sri Lanka's domestic courier industry and to propose strategies to overcome barriers hindering the business functioning of courier industry. This study also focuses on the ways to minimize the external threats from e-commerce companies to the domestic courier industry by forward integration and diversified strategies of these companies. The outcome of this study will be beneficial for small and medium entrepreneurs and self-employees who involve in the domestic delivery business, top to lower management staff in the (international and domestic) courier companies, logistics companies, transport companies, e-commerce businesses, and the government of Sri Lanka.

1.5 Structure of the Thesis

This research will be built upon the previous literature reviews done, unfortunately there were no previous literature reviews about the Sri Lankan domestic courier industry however literature will be derived about Sri Lanka's international courier, express and parcel delivery industry and developing and developed countries domestic courier industry. The barriers and constraints faced generally by the domestic courier industry and especially by the Sri Lankan domestic courier industry will also form part of the literature review.

This thesis is structured as below.

Chapter 2 presents the literature review on courier industry, domestic courier industry its key players, their figures and the impact from the e-commerce industry to the domestic courier operation.

Chapter 3 describes the research methodology that was used in the study to achieve the thesis objectives.

Chapter 4 presents the data analysis which has been computed by using descriptive statistics, exploratory factor analysis using SPSS tools.

Finally, **Chapter 5** consists of the conclusion, recommendation and proposed new avenues for any future research about the domestic courier industry.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Background to the literature

Logistics are the principle device which helps in boosting the benefit by exchanging the labour and products from the assembling point to the primary closures thus it has a few angles that force trouble and hindrance at each stage, Akram et al (2019). Quickly changing financial and social requirements in the globalization, developing upper working class, powerful web-based business, trend setting innovations, occupied purchaser ways of life have prompted expanded and complex last mile conveyances. Then again expanding contest, quick and effective conveyance necessities, diminished conveyance cost, light-footed and adaptable help prerequisites by the clients have pushed the dispatch organizations in unrest. Besides more low maintenance occupations, self-workers; uber, pick-me has helped individuals from different areas to go into last mile conveyance organizations which is making higher outside contest to the customary courier organizations. Thus, advancement of China, India and Asian sub-landmass, and Far East Asia has offered more logistics business chances to the rest of the world.

The procedure of logistics includes convoluted exercises like gathering of items, transport, arranging, distribution centre activities, and last mile Ho et al, (2012). The expression "Courier" started from an individual or an organization who conveys messages, bundles, and mail – initially courier specialist co-ops convey shipments inside a brief distance Kumar, (2015). Courier administrations handle, move and convey bundles from house to house. Worldwide courier administrations handle bundles from one country to another and domestic courier administrations work inside a country. Global courier administrations need greater organization accomplices, immense ventures, high innovation, administrative freedom yet domestic courier administration can be begun; just with one individual and a vehicle. The arrangement of exchanges in the transportation chain are (a) a domestic courier accumulates a bundle from a carrier (the sender of a group); (b) moves the bundle to a source station; (c) a reason terminal joins it for air or road travel; (d) a subcontract air or road carrier delivers the bundle to a goal depot;(e) the target distribution centre confines demand; combines the packs under different

movement addresses; (f) movement dispatches passes on the bundle to its last level headed Wang, (2016). Development in communication and information technology have driven the operational incorporation of varied logistics processes, which accords to cost decreases and increases the quality of the services. In model coordinating hub areas are created with fleet task issues, which additionally include a single designation to shipments to capacitated hub areas Park, (2020) In this literature it is surmised how efficiently the logistics services are integrated to provide a good end service to the customers.

Customary courier organizations were taking care of more express, mail and package conveyances which were little in the size. Notwithstanding, forward coordination of online business organizations and expanding open doors in the web-based business made courier organizations to deal with more money on conveyances, important merchandise, and higher volumetric cargo.

Notwithstanding the expanding conveyance volumes, great assistance quality and consolidated collaboration is the way to support on the courier industry. Interruption and vulnerability in the production network and absence of interest determining techniques are key obstacles which are deterring dispatch organizations to offer quality support. The effects of store network vulnerability and hazard on the exhibition of logistics execution are regularly comparable Tang et al, (2006).

Advancement, effectiveness, adaptability are the key winning components in any service organization. These variables would assist them to turn into a forerunner in the market with higher consumer loyalty. The nature of the service is characterized as the contrast between the normal and (service) got or contentment by the customer. As per Dwianto et al, (2018) the most pertinent variable which influences the consumer loyalty is responsiveness among administration quality measurements effects (actual proof), (dependability), (responsiveness), confirmation (affirmation) and sympathy (compassion). Responsiveness is a factor which is inadequate in domestic courier industry at large mainly in developing countries due to the absence of interest in innovation Gulc, (2020).

Emerging online business associations have set out more open entryways and complex assignments in the local courier industry. Web business exercises have invited more cash down

and switched logistics assignments. Invert operations is viewed as a piece of logistics and supply chains. It is central to appreciate that the functional pattern of inverse logistics is exceptional corresponding to the forward logistics incorporates the use of material disposition the board rules Govindan et al, (2012). Notwithstanding that miniature level foundation advancement in the logistics exercises would empower the domestic courier industry. Tragically Sri Lankan domestic courier industry simply depends on street organizations. Absence of interconnection between different methods of transportation is making failure in the nearby courier industry.

There are arising advancements in industry 4.0, like enormous information, man-made consciousness (AI), web of things (IoT), and they can help courier firms to additionally further develop the converse logistics framework plan Dev et al, (2020). Absence of innovation in the homegrown dispatch industry contrarily affects both the industry and the clients. Mechanical difficulties will prompt functional difficulties and monetary difficulties. Vulnerability in the supply chain cause numerous difficulties to the homegrown dispatch industry. Logistics vulnerability might happen when leaders can't assess the result of an occasion or the likelihood of its event Sanchez-Rodrigues et al, (2008). Ongoing Covid-19 pandemic has affected the domestic courier industry adversely. Homegrown dispatch industry confronted numerous monetary, monetary and administrative difficulties during the lockdown time frame.

Literature review is presented into five segments. It begins with explaining what supply chain the management is. Production network the management is the expansive and the helicopter perspective on the logistics, 3PL and global and domestic courier industry. Secondly, the literature review is about logistics management, which is important for the production network and where all the cargo development, stockpiling, circulation, and conveyance go under logistics management. Third piece of the literature review is about 3PL administrations, where most of the courier business goes under the 3PL specialist organizations. Fourth piece of the literature review is the outline of the courier business. Fifth part comprises the main part about the domestic courier industry, its central members, their investigation by numbers and the foundation of those organizations. The last piece of literature review is about the past research about the business function of the courier.

2.2 Supply Chain Management

Supply Chain Management is an interaction, arrangement of exercises, data, individuals, and assets moving an item or administrations from providers to clients. Supply chain management has been getting well known over the most recent forty years since it was presented in 1980's. It has various definitions from various researchers. Nigel et al, (2006) described store chains as "the organization of the interconnection of affiliations that relate to each other through upstream and downstream linkages between the cycles that produce worth to a conclusive customer as things and organizations". They referred to that all the store chains share one ordinary and central objective to satisfy the end customer. Different periods of creation organization should take "end-buyer devotion" into thought. It doesn't have any effect how far they are from the end-customers. Nigel(2006) similarly recorded five objectives that sway the introduction of supply chain management:

- a) Quality-It suggests the idea of things and organization that shows up at customers. To offer end-customers an extraordinary help, botches ought to be avoided in each stage since a little slip-up could gather a monstrous setback to end-customers.
- b) Speed-Speed is seen from two focuses. The first is the manner in which fast customers can be served and the second means how quick customers' advantage could be met. To have an unrivaled show, creation network bosses should keep both "speed's run fast.
- c) Steadfastness Dependability alludes to assurance, time specifically. Keeping each interaction "on schedule" is of outrageous significance in inventory network, for a little postponement during the cycle could burn through more opportunity for end-clients to get their items or administrations.
- d) Adaptability Supply Chain ought to be sufficiently adaptable to adapt to changes that may happen during the conveyance.

- e) Cost-Cost is brought about in every activity. Improvements in store network the executives, like organization arrangements and decrease in the quantity of providers, are for the most part endeavours to limit exchange costs.

2.3 Logistics Management

Logistics services are a combination of multiple networks, services, technologies that connect the dots between supply chains and value chains that arise from raw materials to production to consumption. Logistics services can be sub sectorized as transportation, fleet management, warehousing, material handling, order fulfillment, network designing, inventory control, supply/demand planning, shipping, rail, air transportation distribution and last mile deliveries.

Worldwide coordination activities interface landmasses, nations and neighborhood calculated activities which associate states, urban areas, towns, streets, corporate and families. Coordination foundation in full scale level requires long haul supported endeavors of territorial and public governments (Feng et al., 2012; Arvis et al., 2014).

The Council of Supply Chain Management Professionals (2013) characterized coordination as the board as "The method of preparation, executing and controlling the10 viable, cost-effective progression of products, stockpiling, work-in-measure stock, completed merchandise and stream of data from starting place to point of utilization to meet the client prerequisites". With the fundamental goal of adding values, logistics ought not just convey and store merchandise in the distribution centre yet in addition offer more types of assistance. Lambert et al (1998) noticed that service is to guarantee the client assistance with the most minimal logistics costs.

2.4 Third Party Logistics Services

For various reasons and contemplations, organizations re-appropriate their calculated cycle to outsider strategic (TPL) organizations. TPL is characterized broadly in past articles. Lieb, (1992) characterized it as "the utilization of outer organizations to perform coordination works that have generally been performed inside an association. The capacities performed by the outsider can

incorporate the whole coordination measure or chose exercises inside this cycle". The definition given by (Berglund et al, 1999) clarified how the strategic cycle affected TPL. They said that TPL alluded to exercises done by a coordination specialist organization for the benefit of a transporter and consisting of essentially the board and execution of transportation and warehousing. In the explanation of Bolumole, (2003), TPL plays out all or part of other organizations' calculated activities.

Experimental investigations noticed that outsider calculation is fundamental for various business regions as of now. Razzaque et al, (1998) called attention to the fact that re-appropriating coordination is a business work loaded up with developing elements everywhere in the world. Liu et al, (2011) referenced ailing in strategic capacities in transportation or capacity clarifies why a few organizations need TPL. Nonetheless, it's anything but the lone motivation behind why organizations pick re-appropriating. (Armistead et al, 1993) noticed another inspiration that drives TPL is that the organizations could zero in addition to their centre capability. Global courier services like United Parcel Services (UPS), FedEx and DHL are some of the leading third-party logistics organizations for some of the driving retail markets.

2. 5 Overview of the World Courier Industry

Courier services have for some time been in presence. Before, they conveyed messages inside specified time by utilizing bouncing pigeons, sprinters and riders riding a horse. As indicated by Small (2012). In the Middle Ages, imperial courts kept up with their own couriers who were paid more than a typical worker. Joined Parcel was quick to build up corporate administrations in the courier business in 1907 Parcelcompare, (2014).

Courier services can be characterized through cargo, coordination, and express packages (Kanuna, (2012). As per Agu, et al, (2015), courier firms consistently boast about speedy, adaptable, tweaked conveyances in contrast with other contemporary methods of package transportation.

By and large, postal and courier services are identified with conveyance of bundles, bundles, reports, letters, printed materials, and web-based business items on money down premise. The postal transportation measure comprises mail assortment, input arranging, coordinate the

development of mail (worldwide region transportation), yield arranging, and disseminate mail Grunert et al, (2000).

Further, the courier business has developed to incorporate conventional mail, dispatch administrations, cargo administrations and web-based business administrations' lately. Subsequently, courier services these days pay little heed to their sizes and face the difficulties managing the broadened cargo, invert coordination, advanced advances, GPS beacons, smart wallets and GPS advances. As suddenly changing external factors and client needs have squeezed courier services to more cutthroat and a fundamental administration. The requirement for courier services has been expanding quickly. To support the present world, courier services need to change through liberation to turn out to be more serious, market-arranged and client driven. In this business climate, Speed and Quality (or responsiveness) is the following wellspring of upper hand Razalli, (2008).

Courier services have an essential influence in the achievement of numerous organizations by giving the indispensable connection among providers and purchasers. The things shift from archives to little bundles and packages. Courier services empower financially savvy conveyance of time-basic products and records (Pholsuwanachai, 2011). The developing interest of courier services, computerization, new advances and expanding utilization of electronic means, is viewed as the most critical change driver in the courier services area. Contemplating the previously mentioned changes, new courier services are continually being created both universally and locally. Courier services exercises ought to be organized in the manner for better control of expenses and nature of administration. The contemporary courier services need to change their strategies to meet changing client needs - developing digital market and e-commerce business. The courier services are being tested by new client propensities and have needed to adjust new advancements.

The courier services industry is yet reliant upon manual work measures and particularly in Asia described by work concentrated. Accordingly, human elements have a focal job in all cycles in this industry. The cooperation of the courier services industry with the client local area administrations is likewise moderately high, concentrated, and proportional (clients come to or

potentially visited by officials). Also, dispatch administrations are accommodation administrations type, which are portrayed by "generally safe, low exertion and low association" (Stell in Setyo; 2002) that have attributes and inclinations to be effortlessly acquired, don't require exorbitant exertion, exchanging minimal expense (move costs) due to the many "players" on the lookout, so the degree of contest in the business is tight.

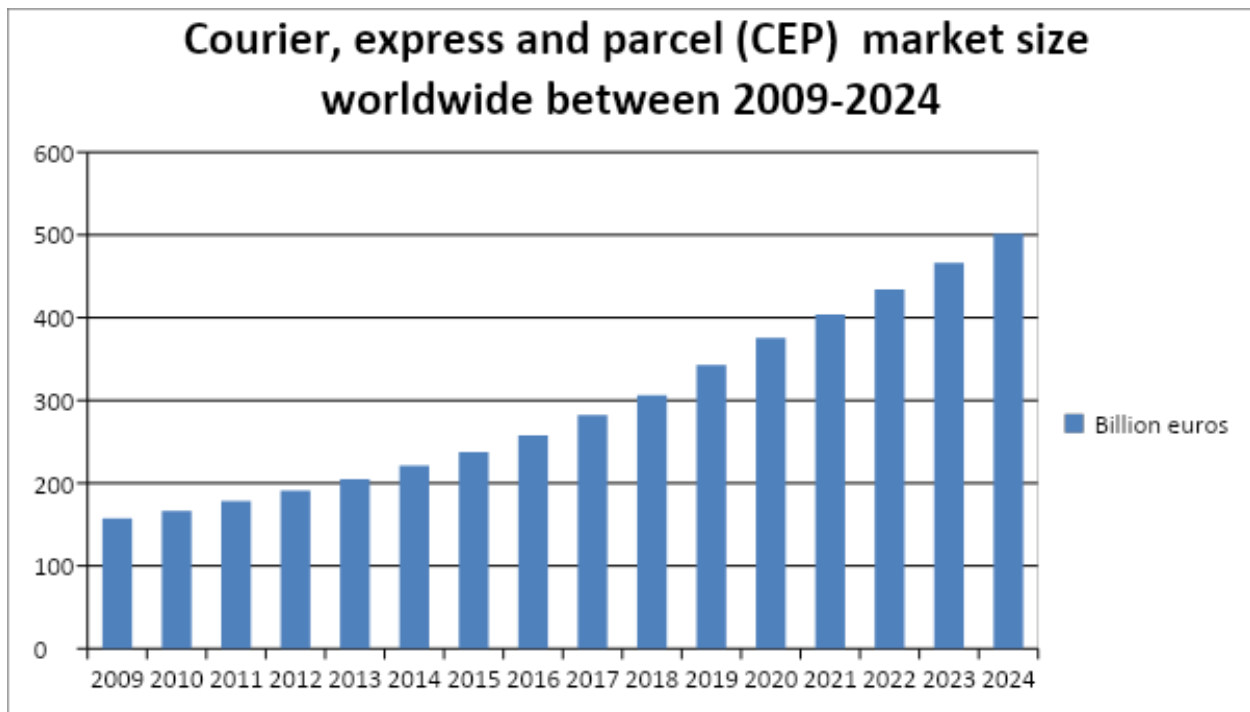


Figure 1: Courier, express and parcel (CEP) market size worldwide between 2009-2024

Source: Statista

In 2016, the income of the China messenger industry represented more than 5% of China's GDP. Courier industry is one of the establishments that guarantee the typical activity of micro economy, as the advancement size of courier industry obliges the improvement of economy. As the improvement in the size of the courier industry obliges the advancement of the economy.

The Courier, Express and Parcel markets (CEP) worldwide have improved fundamentally (Gulc, 2017). In coming years, the worldwide CEP market is expected to develop by 3.5%, arriving at

the worth of \$ 385.09 billion by 2019 (Global Courier, 2014). These measurements propose that the worldwide courier industry is critical to the general economy.

This is apparent by the prevalence of e-commerce industry (Crisafulli et al, 2016), just as the expanded number of couriers services or firms working in courier industry. The usual way of doing things of courier firms and coordination and postal help firms however comparable, vary altogether.

2.6 Overview- The courier industry in Sri Lanka.

The courier industry offers mail conveyance administration, going from little envelopes, bundles, papers; mass desk work to bundled conveyances. Conveyance administration is offered inside a city, inside the country, the district, or to and from nations abroad. The courier services use foot messengers, cruisers, conveyance vans, and trucks for bigger volumes of conveyances.

The Courier industry in Sri Lanka can be divided into two major sectors. They are domestic courier companies and international courier companies. Some companies operate in both domestic and international courier sector. However, there are over 100 registered and unregistered domestic courier companies operating in Sri Lanka. Due to lower entry barriers many companies are entering the courier business in Sri Lanka. Table 1.1 shows the courier companies operating in Sri Lanka. The first column depicts only international courier companies that are operated in Sri Lanka; the second column depicts the international and local courier companies that operate in Sri Lanka and the third column depicts only the domestic courier companies that operate in Sri Lanka. Many international courier companies work in collaboration with local companies as their agents, joint ventures, or franchisers.

Further few international courier companies have bought local courier companies and have started their own domestic courier company. These trends are showing the need to have a strong footprint in the domestic courier market.

Having a strong network in the domestic courier market would help international courier companies to diversify into e-commerce business and other logistics business, increase the revenue by direct imports and exports which also has a local network.

Table 1: The courier companies operating in Sri Lanka

International courier companies	Companies operating in international and local market	Domestic courier companies
DHL	FedEx/TNT- City pak	Pronto Lanka
UPS	Aramex- Aramex	Domex
Linex	Skynet- Prompt XP	Certis Lanka
SCS express	DPD/DTDC- Ace express	DMS
Bridges worldwide	Antronexpress-Antron express	ABS
OCS	Fadar express- fadar express	Grass hoppers
	GTV- Parcel.lk	

Although there are over 100 registered and unregistered domestic courier companies, the researcher has selected ten leading companies with their facts which operates island wide. Lack of transparency, data and confidentiality has been the obstacles in collecting these facts and figures.

Table 2: Market size and growth of the Domestic Courier Industry

Company	Started	Branches	Staff	Fleet	Volume	Revenue
Pronto lanka	1987	50	700			
City pak	1987	28			5000	
Ace xpress	1986	2	20			
Certis Lanka	2001	35				
Domex	2001	50	500+	300+	7000	
ABS	2006	24	300+		3000	
Prompt XP	2015	50+	250			
Fadar express	2019	43	240	150	5000	
Grass hoppers	2016	35	32	60	600	

Pronta Lanka (pvt) Ltd is the largest and oldest domestic courier company which has over 700 staff, 50 branches, 700 own vehicles and over 10000 corporate and personal customers. It provides mail and parcel delivery, courier mail bag services, bank operations, mail room management operations, cash on delivery and other customized deliveries. Pronto Lanka is owned by Singaporean Transnational Group (Transnational Group, 2017).

City pak is another oldest courier service which operates island wide with 28 branches, over 5000 packages handling per day and over 1500 corporate customers. City pak has recently been bought over by Hayleys Group of companies to add more strength to their international courier brands Fedex and TNT.

Ace express is another oldest domestic courier service owned by Aitken Spence Group. It has island wide services through its franchisers. It has shrunk its operations since 2017 to focus more

on domestic services. Ace express has its international brands such as DPD and DTDC and operates fully on digitized platforms.

The Certis Lanka courier services (Pvt) Ltd has 35 branches island wide. Apart from urgent mail and parcel delivery, they also provide corporate mailroom management, mail bags services, secured delivery services, and cash on delivery. Certis Lanka Group has diversified into businesses such as security services, nursing and swift care, technology and consultancy services (Certis Lanka, 2021).

Domex is another island wide courier service with over 50 branches, 7000 movement per day, 300 fleets and over 700 staff. They also provide bank operations, mail bag operations, cash on delivery services apart from their usual mail and parcel delivery.

Prompt Xpress is part of Ideal Group which owns Skynet International courier service. Prompt Xpress was started in 2015 with few branches now they have expanded to over 50 Branches Island wide (Prompt Xpress, 2015)

Fardar express is another island wide courier service, started in 2019 which owns Fardar International Courier as well. Fardar express has 43 branches island wide with over 5000 plus movements per day.

ABS courier (pvt) Ltd is another island wide courier service with 24 branches over 300 staff and 3000 plus movements per day. ABS courier service is a subsidiary of Abans Group and provides corporate mailroom management, bank operations, mail and parcel delivery, cash on delivery, e-commerce fulfillment and they have diversified into business such as security services (ABS Courier, 2006).

The Grasshoppers is another domestic courier service which is owned by Kapruka.lk. Grasshoppers business model is different to other traditional courier companies because they mainly serve as an e-commerce fulfillment and delivery service. They use island wide franchisers for their collection and deliveries by maintaining very less own staff and fleet. It was started in 2016, now it has developed to 35 island wide branches with 32 staff, 60 fleet and daily movement of 600 packages (Grasshoppers, 2016).

DMS (Pvt) Ltd is another unique domestic courier service which provides more value-added services apart from courier service; managing back-office operations, managing corporate mail rooms, document archiving and image management, data entry services etc.

Although the domestic courier industry has been contributing massively to the local economic activities, unfortunately there is no correct data in terms of market share and volumes. After interviewing the domestic courier industry experts in the entire mail delivery Sri Lanka post has 50% of market share then Pronto about 15% followed by Certis Lanka 10%, Citypak 5% and the rest of the courier companies account for 20% market share.

Postal and courier administration is a significant part of that industry that keeps on progressing. The worldwide mail and bundle conveyance was assessed to arrive at USD500 billion out of 2008 (UPU, 2010) and is relied upon to continue to increase.

The business developments in the courier business depend on different ventures also. For example, the outcome of essential industry, the outcome of optional industry, the outcome of tertiary industry, the absolute investment in fixed resources, the complete retail deals of customer products, the international trade volume both exports and imports and the customers utilization.

Last ten years has brought many positive changes to the domestic courier industry since the boom of the e-commerce business globally and locally. Domestic courier companies have invested in advanced technologies, processes, operational activities, and digital payment methods Videshika, (2020).

The Courier industry has been changing dramatically in the past decade and it will continue to change. Many companies have been successful adapting to ever changing industries with new strategies. Examination shows that 49% of customers will shop online more often once the Coronavirus flare-up is finished. Web based spending is projected to go up worldwide by 14% to €2.96tn this schedule year, and on account of this critical take-up in web-based business, FedEx is reshaping its item portfolio for web-based business clients.

2.7 Changing face of Courier industry with the development of e-commerce industry

E-commerce business is one of the significant drivers of the worldwide dispatch administrations industry. The market is required to create immense volumes and could gather incomes of about \$2.4 trillion by 2018 (Market Pragmatist, 2015). The online business exchange essentially includes "business to business" (B2B) organizations and internet shopping. It is filling quickly in the entire Europe and in Bulgaria as well. Additionally, the interest for "business to buyer" (B2C) web-based business exchange is likewise expanding Ostetova et al, (2017)

Domestic courier industry has been changing its direction to serve its customers with more innovative and digital platform. Customers' expectations are increasing daily, they need faster, reliable, secured, visible tracking options and their cash back of their -commerce products sooner. Therefore, domestic courier companies are in high competition to serve the ever-changing customer expectations. Most of them have been transforming to fully digitized processes and equipment such as smart phones, barcode scanners, online tracking, live POD (proof of delivery) updates, visibility in movement of packages, contactless payment methods Karunarathna, (2020).

Further domestic courier companies have come out of the traditional mail and parcel -delivery to home appliances deliveries, vehicle spare parts delivery, and laboratory sample delivery. These products lead to change in the actual weights and volumetric weights in movements of freight. This has also led to more automation, larger fleet requirements such as Lorries Karunarathna, (2020)

In addition to that, the value of the goods has more threat to the industry as the riders deliver more e-commerce products and collect cash. E-commerce businesses created more reverse logistics operations due difficulty in on time delivery, cash collections and malfunctioning or wrong items in the delivery Karunaratna, (2020).

Modernization in mail and courier services is crucial for their continuity. Courier services will progress to develop in line with the development of online shopping or internet business, and more home delivery, together with the increased infrastructure of progressing countries and rural areas. E-commerce will be a key driver in the growth of mail and courier service with increasing people purchasing and selling through the Internet. People and the postal articles and goods to be

moved efficiently from locally within the country and globally will be the success of their courier countries. Thus, a combined progressive design for the postal and courier sector is well-timed as digital and physical communications are likely to complement each other based on Hertog et al (2001). Consequently, to increase the service potential in the time of e-commerce, it was recommended that logistics service operators use the latest information technologies Nixon, (2001). Domestic courier companies have been changing their operational strategies to become more agile and responsive rather than just providing standard services. The E-commerce industry has created more customized deliveries too according to different products and service requirements. Trending global e-commerce markets, busy work life, cheaper products, availability of products, convenient, social media marketing and digital wallet payment discounts has impressed more consumers to become e-commerce consumers Karunarathna, (2020).

Global e-commerce market has grown to USD 3.3 trillion in 2018 and it is expected to be USD 4.5 trillion in 2020 (Figure 2).

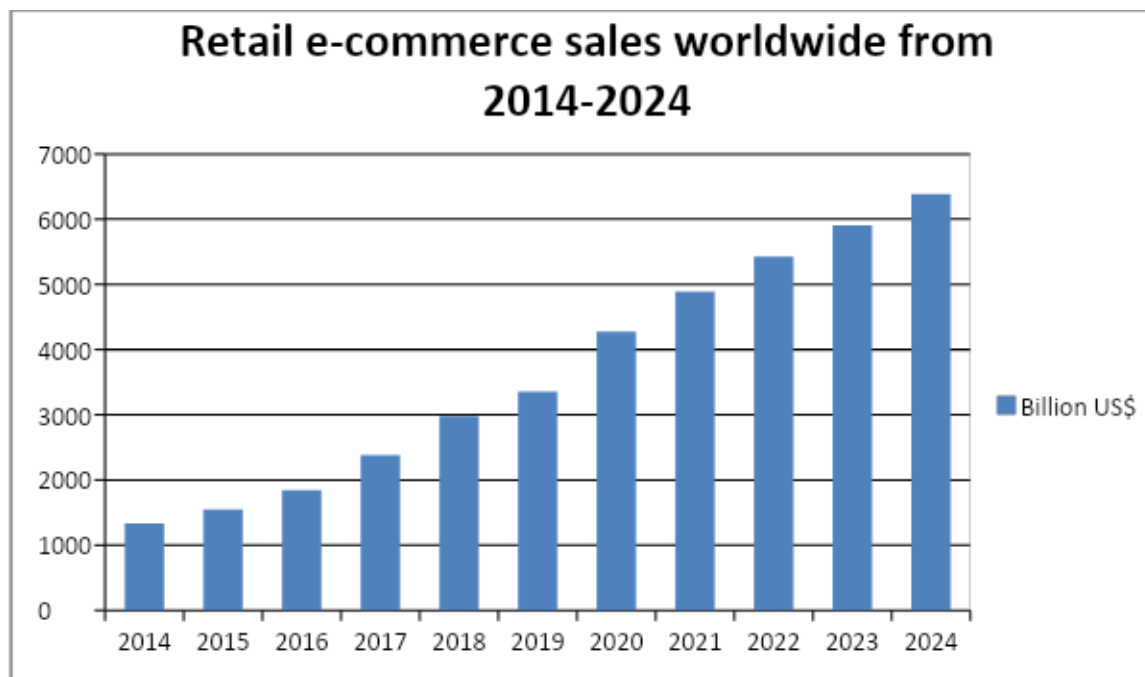


Figure 2: Retail e-commerce sales worldwide from 2014-2020

Forward integration of the e-commerce giants like Amazon, Alibaba and flipkart also threatens the courier companies. This external threat was caused because of their massive volume as bargaining power. Although these e-commerce giants helped the courier companies in the initial stage in their business letter, starting their own delivery fleet, crew, and even aircrafts have created a threat to courier companies (Statista, 2018).

Amazon has become just a start up in a backyard to a revolutionized e-commerce giant and Amazon has become World's most valuable brand. Amazon's recent takeover of other IT, logistics companies and over eighty-five fleet of airline have been creating threat to their logistics partners like UPS and FedEx (Statista, 2018). In Sri Lankan context Alibaba's takeover of kaymu.lk and waw.lk has made a combination with daraz.lk has become the leading e-commerce company and online buyer, seller platform provider in Sri Lanka. Darazas's own delivery fleet DEX has created job opportunities for over four hundred sixty delivery riders and operational staff.

Domestic courier companies have to maintain high service standards when catering to the e-commerce industry. Quality, speed, flexibility, innovation and customized are the effect mix they have to concentrate with. In addition to that domestic courier companies have to maintain separate accounts and ledgers of cash on deliveries. Cash on delivery businesses account for over 80% in the e-commerce industry Karunarathna, (2020). This shows the e-commerce industry has the capability of using domestic courier companies as their storage, delivery, sales, and return services and to collect the cash for their products. This is due to the bargaining power of e-commerce companies with the higher volume and the competition among courier companies. In addition to the big e-commerce companies, SMEs and individual businesses use domestic courier companies to market, deliver and collect their sales revenue through domestic courier companies. Locally made herbal medicines, beauty products, cosmetics, imported electronics, locally manufactured small size products and small trading companies based in Colombo are some of the key businesses and products delivered by the domestic courier companies.

2.8 Domestic Courier Industry Characteristics and Issues

In the domestic courier service industry, service quality is among the most essential variables for consumer loyalty. In the service industry, consumer loyalty is a fundamental component which

contributes intensely to client dependability. Consumer loyalty that builds client dependability ultimately prompts business productivity Ho et al, (2012). Parasuraman et al (2004) characterizes consumer loyalty "accordingly" of the "correlation between anticipated assistance and saw administration" while service quality alludes to the "correlation between "desired service" and "perceived service"

The main variables for individual consumers while choosing a courier provider are service value, service quality and the capacity to change the service as indicated by individual necessities and client needs. For business clients, timeliness is a critical factor in choosing a specific provider.

For instance, India is an ideal spot where an all-around created online economy would be fabricated. Today, home delivery is progressively turning into a critical component in online business. It is seen that home delivery tasks as of now face huge difficulties. A great deal of functional issues comes up. These orders are delivered through more modest and more prudent transporters. Difficulty of returning a thing and cost of conveyance are central points for the respondents not selecting home delivery services. Inaccessibility of receiver at the hour of delivery is another central point. There is a high first-time delivery disappointment which builds costs for transporters and furthermore brings down consumer fulfillment. The return rate turns out to be strangely high. Home deliveries that are harmed or broken cause huge expenses to supply chain accomplices Bharucha, (2017). In India home delivery as a form of courier service has been the trend in India's domestic courier industry. There are also significant issues faced by these courier companies. India has a dramatically expanding number of web clients who certainly are fostering an affinity for web-based shopping. Even though there are steady objections about items arriving late and the endless discount strategies, Indian shoppers are getting influenced to web-based business. However, as retailers attempt to fulfill the rising demand for internet business in the metropolitan urban communities of India, a ton of functional issues come up Bharucha, (2017).

Consequently, the mail order market and the online business market in China have developed quickly, compared with the country's financial development. Since those things requested in such a market should be conveyed, the package delivery market is likewise prone to create, and indeed, many organizations are entering the market. Consequently, the quality of service of parcel delivery by courier companies in China is as yet poor contrasted with that of outside

countries and the number of complaints made by their clients is expanding. In China, the business guidelines for transportation organizations are free so numerous little and medium estimated truck providers were giving collection and distribution services in little regions, as inside a specific city. There are organizations giving package delivery services cross country by diversifying these little truck providers, yet the government is attempting to educate their activity rigorously by presenting the operation model Hayashi et al, (2014).

On the other hand, the courier service industry in Bulgaria had an outstanding achievement in the previous ten years. The market is turning out to be progressively industrious, with local organizations rivaling with global organizations for share of the market. The developing demand for courier services, mechanization, new advancements in technology and expanding utilization of electronic means, is considered as the significant driver in the courier services sector. The courier services in Bulgaria essentially provide expedited delivery and pick up of packages. The courier service transport products that are non-palletized and weigh less than 35 kg. The principal factors that have made Bulgarian domestic courier industry successful are guaranteeing the security of shipments, practicality, service quality, nature of data, personnel contact quality, capacity to change the services as per individual necessities and client needs and service costs Otsetova, (2017).

The proficient delivery and pick up of things, for example, packages or documents are the vital activity of any courier service in Malaysia. In the courier service industry side, service quality is among the most pivotal determinants for consumer loyalty. They are one of logistics specialist co-ops in supply chain management wherein to serve delivery of products and parcels from wholesaler or retailers to consumers straight away. Because of the flourishing demand, in 2011, Logistic Specialist Providers (LSP) started offering Cash on Delivery (CoD) into web-based business activities to help their clients particularly courier services. The proficient delivery and pick up of things, for example, parcels or potential documents are a center activity of any courier service. Courier services with the furthest down the line innovation will permit clients to screen the delivery measures progressively following. Advancements, for example, standardized identification checking and what's more, digital signature will accelerate the conveyance cycle Izzah et al, (2016).

Some of the authors consider various elements which act as barriers to the business functioning of domestic courier industry. Their points of views are mentioned below:

Weiss, (2002) considers workers' job dissatisfaction in their jobs can act as a challenge for the smooth functioning of the business. He states this in a general context of all business functions in all industries and the attitudes of workers towards their jobs.

Mudor, (2011) states that the most important practice of HRM of any business lies in recruitment and training of the employees to companies. If appropriate selection process is not applied when recruiting couriers, the company might employ wrong persons to the job. If appropriate training is not given to employees there is a high chance of employees becoming unsuitable and dissatisfied in their jobs which can lead to employees leaving their jobs which in turn can become a crucial challenge for the smooth functioning of the domestic courier industry.

Noordin et al, (2012) states that in Malaysia the postal and courier service are becoming more dependent on the use of best ICT tools in terms of timely delivery to customers. The courier industry has recognized that lack of proper utilization of ICT, for example; automation has created a barrier to the running of the business function of the courier industry as more and more businesses are transforming themselves into the automation of their operations.

Ding, (2013) says that in China the delivery density in the domestic courier industry acts a barrier for the business function of the courier industry. There is poor infrastructure and inefficient management capability which have contributes to less delivery density which in turn acts as a barrier to the business function of the courier industry.

Ringland et al (2019) states that the domestic courier industry is facing heavy competition from digital and mobilized service industries which have the economies of scale to adopt and spend on digitized services in comparison to the domestic courier industry. Thus threat faced by other industries which are digitized and mobilized act as a barrier to the business functioning of the domestic courier industry in many developing countries.

(Riyanto, 2020) states that in Indonesia workers commitment to work is very important for the smooth functioning of a business and the lack of proper labour law for the couriers act as a

barrier to the business functioning of a courier industry because there are no laws to give special privileges to couriers because sometimes their delivery cycle moves on for 24 hours per day.

Spitler, (2020) accordingly says that managing the fleet with sophisticated software is a must in the courier industry to make effective business choices. Fleet management can act as a barrier for domestic courier industry because of the inability to activate and operate sophisticated software because it can add to the operation cost of the firm fleet.

There are few research focusing on logistics sector in Sri Lanka have identified several issues in e-commerce trade. Edirisinghe, (2013) pointed out that low domestic volume, inconsistency in operational productivity in the supply chain, issues related to feeder network availability to cover all destinations origins are major reasons for low level of delivery performance in Sri Lankan context. The above-mentioned literature reviews about other countries' courier industry shows the significance of the courier industry in this world as a whole. The fundamental characteristics all the courier companies are the same; however, issues the industry faces may be different to country context. The present study explores the barriers the courier industry face from the perspective of courier industry managers.

CHAPTER THREE

3. RESEARCH METHODOLOGY

As shown by Kumekpor, (2002) research approach fuses the foreordained frameworks, methods, musings and habits of speculation proceeded in finishing express things or achieving explicit finalities or targets. Yin, (2003) similarly explained that an assessment theory describes the investigation activity, how to proceed with the investigation; how to evaluate progress, and various factors that guarantee the accomplishment of the investigation. Explorative assessment bases on searching for new pieces of information, presenting requests and securing an unrivaled appreciation of the current wonder Robson, (2002). Thus, Saunders et al, (2009) in the same way stresses that the exploratory methodology is best when the assessment attempts to have a reasonable enthusiasm for a new phenomenon. Moreover, Saunders et al, (2009) furthermore hold the view that this procedure is better than various techniques, as it deals with the expense of the researcher's higher flexibility and adaptability to changes that may occur during the investigation association. Adam and Schvaneveldt, (1991) noted that flexibility is habitually displayed by the exploratory expert's ability to restrict it from a more broad and diverse main interest.

There are two normal exploration approaches are the subjective examination and quantitative examination plans Vanderstoep and Johnston, (2008). Receiving either subjective or quantitative relies upon the general objective of the investigation. In such a manner, Malhotra, (2007), recommended that reviews that look to find new connections regularly embrace the subjective methodology, while those trying to set up an end frequently receive the quantitative exploration approach. Furthermore, a few researchers partner the deductive and inductive plan of examination to the quantitative and subjective separately Amaratunga et al, (2002). Suanders et al, (2009) clarified that the deductive examination configuration centers around gathering information prior to defining a hypothesis though the inductive plan considers guessing prior to gathering information in that regard.

3.1 Research design

The overall strategy of this research is to identify barriers to the functioning of the domestic courier industry in Sri Lanka. This research was conducted by analysing the global and local courier industry through the previous literature reviews, designing a questionnaire after interviewing 6 industry experts interpreting the answers and converting them to data and analysing the data to identify the objective of the research. This research design is a mixed method where qualitative and quantitative data is collected and analyzed.

Table 3: Thematic Analysis of the Interview Transcript (n=6)

Respondent	Barriers to the business functioning of the Domestic Courier Companies
Respondent 1	Market Share in comparison to postal services, Inflation cost of line hauls, traffic laws
Respondent 2	Profit margin, Labour shortage, e-commerce
Respondent 3	Threats from other industries, Market share in outstation movements, Constrains in islandwide line haul network
Respondent 4	ICT Infrastruture, Customs Procedures and import duties
Respondent 5	Carbon footprint, ICT adaptation in comparison to international courier industry, Customer Service
Respondent 6	Accountability in terms of thieving, COD collections, Return on investment
Total	Regulatory= 3 Economic= 5 Social= 1 Financial= 3 ICT= 3 Threats= 1 Operational= 1 Customer Retention =1

3.1.1 Expert Review Profile.

Many experienced and market leaders of the courier industry were interviewed by the researcher to receive their expert opinions of the domestic courier industry in terms of many issues faced by the industry itself internally and externally. These experts were owners and managers of well-established courier companies of Sri Lanka. Their success stories and their opinions of the status of current domestic courier companies were the background information which helps the researcher to prepare the questionnaire for this research

3.2 Population and Sample for the Research

Sri Lanka's domestic courier industry has been developing rapidly due to global e-commerce development. Also, it is an industry which has less entry barriers, less capital investment and not necessarily skilled workers needed. Therefore, the exact figures of the courier companies are unknown. The population of domestic courier companies is about hundred registered and unregistered courier companies. This research has been conducted by randomly sending the questionnaire to hundred managerial level staff (100) as sample from ten (10) registered, leading courier companies which are operating island wide. These samples have been selected from all the organizational functions representing marketing, finance, sales, operations, administration, and human resource. However, the actual data collected were only from forty-eight (48) participants leaving a response rate of 48%.

3.3 Data collection

Walliman, (2005) identified that data and insights are sorts of realities that can be called information, utilized by specialists to examine the issues that they plan to explore. There are two procedures to gather data: secondary investigation and primary investigation. Data has been collected through a questionnaire from managerial staff who works for the selected sample domestic courier companies. Data was collected by a mix of methods-Online form, direct mail, over the phone and direct interviews.

The questionnaire was designed after taking into consideration both literature review and the experts view of the factors that could act as barriers to the business functioning of the domestic courier industry. Six open-ended expert interviews were conducted to identify existing barriers in the courier industry in Sri Lanka context (Refer Annex). The questionnaire contained thirty-eight questions. The responses to each question are scaled from 1-5 on a Likert scale strongly disagree-1, disagree-2, neutral-3, agree-4 and strongly agree-5.

3.4 Data analysis and presentation

As per LeCompte and Schensul (1999) research information investigation is an interaction utilized by analysts for lessening data to a story and deciphering it to infer experiences. The data investigation helps in lessening an enormous piece of information into more modest parts, which bodes well. Marshall and Rossman, (2006) then again, depict data examination as a cluttered, questionable, and tedious, yet imaginative and intriguing cycle through which a mass of gathered data is being brought into an orderly manner, designed and which brings meaning. Collected sample data were analyzed using the descriptive statistics and exploratory factor analysis (EFA).

3.4.1 Descriptive Statistics

Descriptive statistics were used to analyze the replies given to the questionnaire. The responses were given to 38 questions on the questionnaire by the forty-eight industry personnel. Evidently, seven questions were omitted when the descriptive analysis and factor analysis were carried out as they are general questions which are related to opportunities with e-commerce industry, return on investment, sustainability, and market share competing with the postal services, business demand in outstation, collaboration with international courier companies and the requirement for forming a domestic courier association.

3.4.2 Exploratory Factor analysis

EFA is an exploratory examination method for the most part suggested when the examination region is new and has not been investigated by numerous researchers previously. Since none of the analysts has required an exertion with respect to the hindrances in carrying out SDGs in seaports, EFA obliges the target of disentangling the hidden impediments.

The reasonable part of the EFA is to decrease the elements of the first space to another arrangement of diminished variables dependent on the fundamental inert head Finch, (2013). The relationship grid is the important idea under the above interaction. Connection between factors is estimated and the factors that have a higher relationship among one another are gathered into a one-set called factor Samuels, (2016). SPSS statistics 26 software is utilized in the investigation of the data acquired.

3.4.2.1 Communalities

Communalities in factor examination are significant as it shows every factor's difference clarified by the normal factor fluctuation. The main idea is factors with high communalities are very much addressed in the extracted normal factor space and factors with low communalities are not. As indicated by Osborne et al, (2008), communalities above 0.4 are firmly addressed by extricated factors. Henceforth in factor extraction factors with mutuality lower than 0.4 were eliminated and extricated components to best address the elements.

Table 4: Communalities

	Initial	Extraction
unhealthy Competition	1.000	.971
Inflation in cost of labor	1.000	.984
Inflation in cost of line hauls	1.000	.991
Collecting and managing cash on deliveries	1.000	.976
profit margin	1.000	.968
On time delivery requirement	1.000	.973
Managing the fleet	1.000	.992
Lack of delivery density	1.000	.928
Larger and diversified freight	1.000	.991
Retaining skilled staff	1.000	.981
Recruitment and training	1.000	.994
Adopting ICT infrastructure (smart phones, scanners, GPS, tracking)	1.000	.936
Automation	1.000	.978
IT adaptation	1.000	.979
Labour laws	1.000	.958
Difficulty of work life balance	1.000	.962
Carbon footprint output	1.000	.961
Customer retention	1.000	.977
Traffic laws	1.000	.947

Extraction method: Principal Component Analysis

3.4.2.2 Reliability

Cronbach's alpha is a measurement normally cited by researchers to show that tests and scales that have been developed or embraced for research projects are reasonably good (Taber, 2018). The Cronbach alpha is used as a means to measure the reliability of the questionnaire used in this research. (Pallant, 2001) states Alpha Cronbach's measure above 0.6 is viewed as high reliability and acceptable list (Nunnally and Bernstein, 1994). Alpha Cronbach measures in the score of 0.60 - 0.80 are viewed as moderate, and acceptable. While Alpha Cronbach in the scores of 0.8

and up to 1.00 is generally considered as excellent, Pallant(2001) states Alpha Cronbach's measure above 0.6 is viewed as high reliability and an acceptable list (Nunnally and Bernstein, 1994). Alpha Cronbach measures in the score of 0.60 - 0.80 are viewed as moderate, and acceptable. While Alpha Cronbach in the scores of 0.8 and up to 1.00 is generally considered as excellent. The Output of the Reliability Statistics of the Data Analyzed is presented in Table 4.

Table 5: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.906	.907	19

According to the data set taken for analysis, the output of the Reliability Statistics done on the SPSS proves that the data set to be reliable and has internal consistency.

3.4.2.3 Sample adequacy

The proposed sample was 100 participants but due to Covid-19 pandemic, quarantine and lock down issues many did not respond to the questionnaire. The data was derived, and analysis was done with the response received from 48 participants. The analysis and the evaluation of the data will not be generalizable to the population at large because of the inadequacy of the sample.

Table 6: KMO and Bartlett's Test

Kaiser- Meyer-Olkin measure of sampling adequacy	.577
Bartlett's test of sphericity	Approx. Chi-Square
	1301.475
	Df
	190
	Sig.
	.000

a. Based on correlations

The Kaiser-Meyer-Olkin (KMO) Test is a measure of how well suited the data is provided for Factor Analysis. The test measures sample adequacy for every factor in the model and for the total model. The measurement is a proportion of the extent of difference among factors that may be normal change. The lower the extent, the more fit your information is to Factor Analysis. KMO returns scores somewhere in the range of 0 and 1 which is a dependable guideline for deciphering the measurement. KMO estimates somewhere in the range of 0.8 and 1 show the testing is sufficient. KMO esteems under 0.6 shows the testing isn't satisfactory and that

therapeutic move ought to be made. A few creators put this worth at 0.5, so utilize your own judgment for values somewhere in the range of 0.5 and 0.6. KMO Values near zero implies that there are enormous fractional connections contrasted with the number of relationships. At the end of the day, there are boundless connections which are an enormous issue for factor analysis. According to he termed each range of score a name as 0.00 to 0.49 unsuitable, 0.50 to 0.59 hopeless, 0.60 to 0.69 remarkable, 0.70 to 0.79 ordinary, 0.80 to 0.89 commendable and 0.90 to 1.00 excellent Prasetyo et al, (2019). According to the KMO table of this research the value is 0.577 which shows that the data set is not adequate to give a good factor analysis score. The data is inadequate because the size is small, only 48 participants compared to the proposed sample size of 100 participants.

3.4.2.4 Factor Rotation

Varimax rotation is a factual strategy utilized at one degree of factor analysis as an endeavour to explain the relationship among factors. By and large, the interaction includes changing the directions of information that outcome from a principal component analysis. The change, or revolution, is planned to amplify the fluctuation divided between things. By augmenting the common fluctuation, results all the more discreetly address how information is associated with every vital segment. To amplify the change for the most part intends to expand the squared

connection of things identified with one factor, while diminishing the relationship on some other factor. As such, the varimax rotation improves on the loadings of things by eliminating the center ground and all the more explicitly distinguishing the factor whereupon information load (Allen, 2017).

3.5 Operationalization of the research

Service quality has arisen as an essential device to endure and flourish in the current situation of hyper aggressive administrations market. Little miracle, it has likewise come up as a push space of examination during the last over multi decade. Extensive work has been done in regard of its conceptualization and Operationalization, yet in addition as far as building up its linkages with different develops like consumer loyalty, esteem and conduct expectations Jain et al, (2015)

A significant issue with conceptualization work in the space of characterizing administrations has been the innate nature of administrations. Being basically immaterial, it is difficult to characterize them the manner in which one conceptualizes quality with regards to actual items. A significant leap forward in the space occurred in the mid eighties when a couple of specialists advanced a client driven way to deal with its definition Jain et al, (2015)

From the above literature reviews, it was found that operationalization is a very significant element that needs to be incorporated into a research. Without Operationalization of the variables the research will not have clear data as to which to be analysed.

The Table 6: below shows the variables which were taken for operationalization for this research purpose. These variables were taken for operationalization from the information gathered from the literature review and the interviews conducted with experts in the field of domestic courier industry in Sri Lanka.

Table 7: Operationalization of the research

Variable	Author	Unit of measurement
Managing the fleet	Spitler(2020)	Likert scale
Inflation in cost of line hauls	Expert interview	Likert scale
Laws related to taxation	Expert interview	Likert scale
Collecting and managing cash on deliveries	Expert interview Karunarathna (2020)	Likert scale
On time delivery requirement	Expert interview Bharucha (2017) Izzah (2016)	Likert scale
Profit margins	Expert interview	Likert scale
Pricing	Expert interview	Likert scale
Debt collecting	Expert interview	Likert scale
Carbon footprint	Expert interview	Likert scale
Lack of delivery density	Ding, (2013) Edirisinghe (2013)	Likert scale
Larger and diversified freight	Expert interview	Likert scale
Difficulty of work life balance	Weiss, (2002)	Likert scale
Managing riders	Expert interview	Likert scale
Recruitment and training	Mudor, (2011)	Likert scale
Labor shortage	Expert interview	Likert scale
Automation	Noordin et al, (2012)	Likert scale
IT adaptation	Expert interview Gulc, (2020)	Likert scale
Inflation in cost of labor	Expert interview	Likert scale
Labour laws	Riyanto, (2020)	Likert scale
Traffic laws	Expert interview	Likert scale
The regulatory lockdown permits	Expert interview	Likert scale
Regulatory acceptance level	Expert interview Edirisinghe (2013)	Likert scale
Retaining skilled staff	Expert interview	Likert scale
Thieving	Expert interview	Likert scale
Lack of Packing material	Expert interview	Likert scale
Lack of job recognition	Expert interview	Likert scale
Adopting ICT infrastructure (smart phones, scanners, GPS, tracking)	Ringland et al(2019), Gulc, (2020)	Likert scale
Unhealthy competition	Expert interview	Likert scale
The new entrants from other industries	Expert interview	Likert scale
Customer retention	Gulc, (2020)	Likert scale

CHAPTER FOUR

4. DATA ANALYSIS AND RESEARCH FINDINGS

This chapter details how the research findings which were qualitative data were transformed to quantitative data using proper data transforming into a SPSS Software to get a clear descriptive and factor analysis of the data.

4.1 Descriptive statistics

Barriers recorded above middle point (Likert scale 3) act as barriers to the business functioning of the domestic courier companies (Table 3).

Table 8: Barriers of the efficiency questionnaire with the mean value

Barriers to the functioning of the domestic courier industry	Mean value
Pricing	3.44
Adopting ICT infrastructure (smart phones, scanners, GPS, tracking)	3.42
Collecting and managing cash on deliveries	3.25
Managing riders	3.21
Labor shortage	3.13
Regulatory acceptance level	3.13
The threat from the other competitors	3.08
The regulatory lockdown permits	3.06
Larger and diversified freight	3.00
On time delivery requirement	2.96
Unhealthy competition	2.88
Lack of job recognition	2.88
Difficulty of work life balance	2.88
Customer retention	2.88
The new entrants from other industries	2.79
Profit margins	2.75
Retaining skilled staff	2.75
Lack of Packing material	2.75
Lack of delivery density	2.71
Thieving	2.71
Debt collecting	2.63
IT adaptation	2.63
Automation	2.58
Labour laws	2.58
Traffic laws	2.57
Inflation in cost of labor	2.50
Laws related to taxation	2.50
Recruitment and training	2.46
Carbon footprint output	2.38
Inflation in cost of line hauls	2.25
Managing the fleet	2.21

4.1.1 Pricing

Due to less entry barriers and more e-commerce businesses attracted more companies to start courier business. This has created a price war among existing and new courier companies. Reducing prices to gain more market share has been creating a difficult situation in the industry for its survival.

4.1.2 Adopting ICT infrastructure

Development of e-commerce business and the ICT, demand for courier business has been increasing. Also, the requirement by the customers for value added services such as tracking packages, getting on time POD (proof of delivery) and collecting COD(cash on delivery) are increasing. These actions forced courier companies to become more digital technology driven to be competitive in the market. Therefore, courier companies have to invest in digital technological devices, applications, systems, software's, hardware's, and GPS technology. This technological infrastructure created more capital investment and maintenance cost.

4.1.3 Collecting and Managing Cash on Deliveries

E-commerce business has increased over 50% of total business in the courier companies. Some courier companies handle only e-commerce products. Among these e-commerce businesses over 70% accounts for COD (cash on delivery) packages. Among those COD packages over 90% transaction done by cash. Some riders collect over 100000/= in a day operation. There is a high risk of collecting the COD from the riders and settling back to the customers. Recruiting more administration and finance staff to handle COD collection will be costly. However, fail to do an efficient system to tackle this issue can make them face heavy financial and reputation losses.

4.1.4 Managing riders

Managing the riders in an efficient way is the key to success of the courier companies. Riders represent the companies. Riders spend most of their time on the field. Operational managers face many barriers when handling them to be more efficient.

4.1.5 Labour shortage

Due to lack of pay, white collar jobs preferred by the young generation, higher pay from other industries, lack of work life balance, lack of flexibility, less job recognition and a bleak career path are some of the main concerns in recruiting and retaining operational staff in the courier industry.

4.1.6 The courier service considered as essential services in an emergency situation

Courier companies have been doing a great job in this pandemic situation. However due to lack of recognition as an essential service by the regulatory body; they have been put in a very difficult situation. Edirisinghe, (2013) also recognized the importance of establishing a separate statutory body for logistics, not only for courier services but also covering all logistics services. Getting emergency passes, transporting goods between provinces and getting their staff back to work are some of the barriers faced by the courier companies from the beginning of the Covid-19 pandemic.

4.1.7 Threat from other industries

Threat from other industries such as Uber, Pick me, Daraz and other digital mobility companies and e-commerce companies have started delivery services which are similar to courier services. Pick me flash, Uber connect are some of them. Consequently, in the initial stage Daraz was offering high volume businesses to the courier companies; however, since Daraz started their own delivery crew DEX the business for courier companies has reduced. In future if Daraz starts a courier company as forward integration as their strategy, courier companies will face a high threat.

4.2 Exploratory Factor Analysis

The communalities table shows the variance of each variable of barriers accounted for. A total variance of 97% was obtained for the 9 factors taken into analysis. None of the factors were rejected because every factor had a coefficient more than 1. These factors showed that these were significant barriers to the efficient performance of courier companies in Sri Lanka.

Table 9: Total Variance

C o m p o n e n t	Initial Eigen values			Extraction sums of squared loading			Rotation sums of squared loadings		
	Total	% of variance	Cumul ative %	Tota l	% of varian ce	Cumul ative %	Total	% of varianc e	Cumul ative %
1	7.492	39.433	39.433	7.492	39.433	39.433	3.455	18.183	18.183
2	2.795	14.710	54.143	2.795	14.710	54.143	2.588	13.620	31.803
3	1.903	10.016	64.159	1.903	10.016	64.159	2.330	12.262	44.064
4	1.526	8.032	72.191	1.526	8.032	72.191	2.218	11.675	55.739
5	1.224	6.444	78.634	1.224	6.444	78.634	2.105	11.081	66.820
6	1.057	5.561	84.196	1.057	5.561	84.196	1.543	8.119	74.939
7	1.020	5.370	89.566	1.020	5.370	89.566	1.503	7.909	82.848
8	.769	4.047	93.613	.769	4.047	93.613	1.380	7.265	90.113
9	.659	3.466	97.079	.659	3.466	97.079	1.324	6.966	97.079
10	.234	1.234	98.313						
11	.126	.666	98.978						
12	.112	.589	99.567						
13	.045	.239	99.806						
14	.017	.088	99.895						
15	.013	.070	99.965						
16	.005	.025	99.990						
17	.002	.010	100						
18	9.946E17	5.235E-16	100						
19	6.658E16	-3.508E-15	100						

Extraction method: Principal component analysis

4.2.1 Scree plot

In multivariate measurements, a scree plot is a line plot of the Eigenvalues of variables or head segments in an investigation. The scree plot is utilized to decide the quantity of variables to hold in an exploratory factor examination (FA) or component parts to keep in a foremost principal component analysis (PCA). The scree plot depicts the Eigenvalue of 9 variables that were extracted.

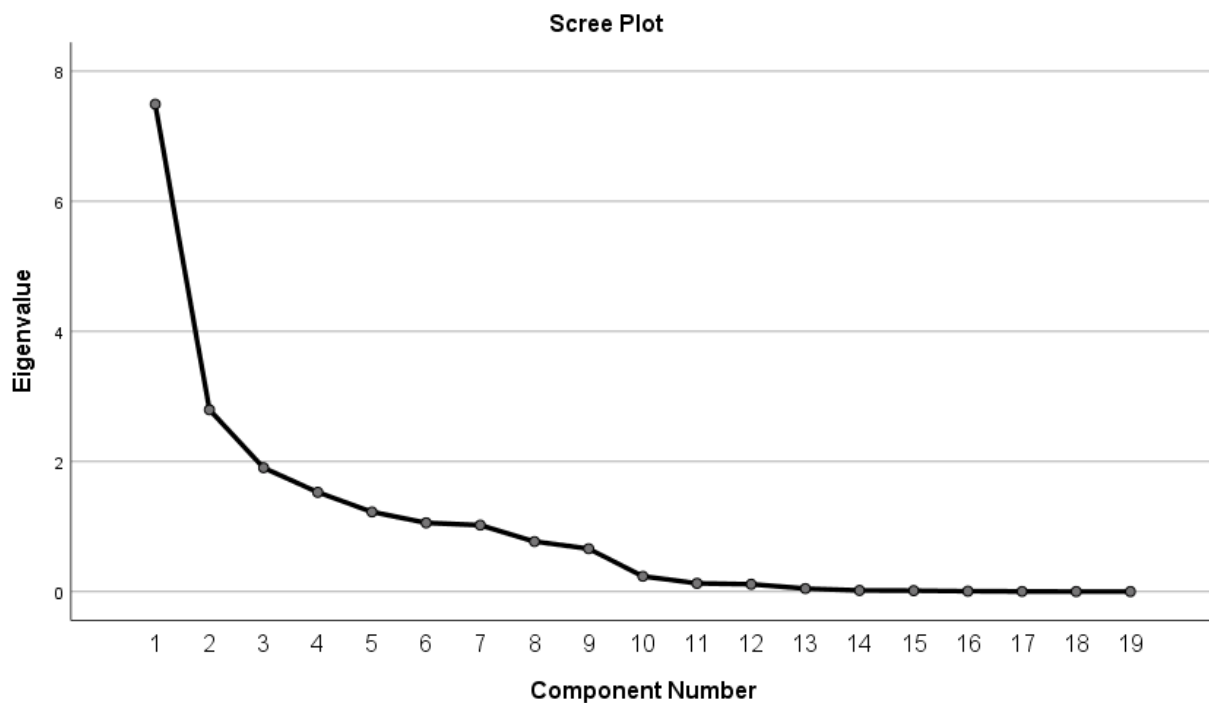


Figure 3: Scree plot

From the below rotated component matrix, nine broad categories of the barriers to the business functioning of the domestic courier industry of Sri Lanka are determined. They are grouped under Regulations, ICT, Operations, Transport, Finance, Human Resource Management, Threats from other industries, Environmental issues and Customers. Each of these categories has some contributing factors.

Table 10: Rotated component matrix

Variable	RC	ICT	OP	EC	FC	HR	TH	SC	CR
Inflation in cost of labour	.919								
Labour laws	.908								
Traffic law	.876								
Automation		.931							
IT adaptation		.929							
Carbon footprint output			.915						
Lack of delivery density			.686						
Difficulty of work life balance			.629						
Larger and diversified freight			.591						
Managing the fleet				.930					
Inflation in cost of line hauls				.888					
profit margin					.799				
Collecting and managing cash on deliveries					.684				
On time delivery requirement					.675				
Recruitment & training						.927			
unhealthy Competition							.861		
Adopting ICT infrastructure (smart phones, scanners, GPS, tracking)							.630		
Retaining skilled staff								.920	
Customer retention									.976

Extraction Method: Principal component Analysis
Rotation Method: Varimax with Kaiser Normalization
Rotation converged in 8 iterations

4.2.1 Regulatory challenges (RC)

Labour cost 0.919- courier industry is a labour-intensive industry. Though customers can place their orders using different modes by calling, emailing and online, humans are needed to do the actual delivery of the products to the customers.

Pay and rewards allude to pay scale which includes money related and non-financial segments to perceive and reward individuals for their commitments in the company (Noe et al., 2008). Remuneration and benefits assume a part in compensating individuals to hold the high level of work (Mudor, 2011). As indicated by (Ting, 1997) there is an important connection among pay and rewards with work fulfilment. This disagreement is upheld by the clear research carried out by Steijn, (2002) which the whole Dutch public labourers' work fulfilment which has shown a positive relationship with the service rewards Lee et al., (2006); Zheng and Siu, (2009). As indicated by Zheng and Siu, (2009) the model "compensation and rewards" is the most significant fulfillment driver which is demonstrated by the positive coefficient.

However, in Sri Lankan domestic courier companies try to recruit couriers for less than minimum salary of Rs 24000 according to the salary explorer 2021 update (salary explorer, 2021). In comparison to foreign countries, domestic courier companies spend less on training the couriers before giving the jobs as Sri Lankan companies are not in a position to incur high expenditure on training as this will increase their operation cost and reduce their profit. In addition to the training cost, labour cost will increase further if they hire couriers to fast deliveries making them work for long hours. Domestic courier companies need to run their operations smoothly but without paying the right payment to the couriers they cannot carry on their operations smoothly thus affecting the business functioning of the domestic courier industry.

4.2.1.1 Labour law

Labour law0.908- Couriers are also under the general labour law in Sri Lanka; working hours, health and safety, remuneration, sick and holidays, other benefits, etc. In Sri Lanka, the domestic courier industry takes little notice of couriers' job satisfaction in terms of working hours, remuneration, and other benefits. In Indonesia, there are no special laws to protect couriers unlike in the foreign countries. Commonly, the courier organization activities are to be 24 hours changing in accordance with the client requests. The immediate effect of 24 hours activity is an expansion in operational expenses, particularly pay as extra time costs, workplace that ought to be put forth agreeable just as the organization's attempts to keep on building worker commitment maintained (Riyanto, 2020). The lack of a special labour law to protect couriers in the domestic courier industry is a barrier to the business function of the domestic courier industry in Sri Lanka.

4.2.1.2 Traffic law

Traffic law 0.876- Sri Lanka imposes a lot of traffic laws on motorists. Especially in the case of couriers there is no special consideration for them in the traffic laws. There is no special parking space available for couriers and therefore they have to pay fines if they park in convenient spaces so as to collect or deliver the products. Whereas in foreign countries couriers have allocated parking spaces as they are considered special motorists. In UK courier services include delivering packages, things, or merchandise to clients, any place that client turns out to be geologically found. Often parking limitations won't give the courier any issue as there will be sufficient space close by to stop up so the courier can unload and make the delivery (Driving for profit, 2015). Parking restrictions because of the traffic law act as a barrier to the business functioning of the domestic courier industry. Courier companies have been doing a great job in this pandemic situation. However due to lack of recognition as an essential service by the Regulatory Body; they have been put in a very difficult situation. Getting emergency passes, transporting goods between provinces and getting their staff back to work are some of the barriers faced by the courier companies from the beginning of the Covid-19 pandemic due to strict traffic laws imposed.

4.2.2 ICT challenges (ICT)

Automation 0.931 and IT adaptation 0.929- The fast advancement of internet business and expanding client assumptions make service quality improvement a fundamental target for courier organizations. In Malaysia, the public postal services and private courier organizations fundamentally contribute towards the public economy and furthermore give the business chances. Postal and courier operations in Malaysia have gone through an extreme change because of the fast development of Information Communication Technology (ICT). By the way, the need to have proficient postal and courier operations is obvious in view of the expansion in online e-commerce applications nowadays and the requirement for interspersed supply networks Noordin et al, (2012).

Developed countries have the financial backup to invest in new forms of technology like automation and artificial intelligence to contribute fairly far more to the smooth functioning of the courier organizations to provide more versatile services in the field. However, in this context, the case with countries like Sri Lanka is that it lacks the financial support to aid courier companies to invest in the latest technology such as automation and artificial intelligence. Thus, ICT acts as a barrier to the business functioning of the domestic courier industry in Sri Lanka.

Development of e-commerce business and the ICT has led demand for courier business to increase. Also, the requirement by the customers for value added services such as tracking packages, getting on time POD (proof of delivery) and collecting COD(cash on delivery) are increasing. These actions forced courier companies to become more digital technology driven to be competitive in the market. Therefore, courier companies have to invest in digital technological devices, applications, systems, software's, hardware's and GPS technology. This technological infrastructure has created more capital investment and maintenance cost. E-commerce business has increased over 50% of total business in the courier companies. Some courier companies handle only e-commerce products. Among these e-commerce businesses over 70% accounts for COD(cash on delivery)packages. Among those COD packages over 90% transaction done by cash. Some riders collect over 100000/= in a day operation. There is a high risk of collecting the COD from the riders and settling back to the customers. Recruiting more administration and finance staff to handle COD collection will be costly. However, failing to do an efficient system to tackle this issue can make them face heavy financial and reputation losses.

4.2.3 Operations challenges (OP)

Carbon footprint output 0.915, lack of delivery density 0.686, difficulty of work life balance 0.629 and larger and diversified freight 0.591- The general administration of logistics services over ongoing years depends on a broad utilization of computers, programming with installed calculations are laying the foundation of streamlining and mechanizing the courier service operations Krastev, (2016). In Korea, a quick expansion in merchandising indirectly is speeding up a lofty flood of quick courier service delivery markets. This gradual outcome is mostly because of an expanding utilization through online-based buying, for example, web shopping, versatile shopping and TV home shopping, which has evidently prompted a development of fast courier service deliveries Ko et al, (2018) Though the developed nations are progressing in the domestic courier industry in their countries, Sri Lanka's domestic courier industry is facing barriers in operations for its smooth functioning in factors such as delivery density, volume of deliveries, carbon emission and work life balance. Delivery density is the weight of the goods and the charges applied to the delivery service will depend on the weight of the package and the space it would occupy in a vehicle it would be transported. In Sri Lanka the domestic courier industry is facing a threat in terms of delivery density because the packages to be delivered are of different densities which are to be collected and distributed to different areas. The domestic courier companies need to spend more on transportation costs on different areas which make only less density to and from one area to another, which means cost of delivery cannot be covered over a large delivery density of packages together. This problem could be overcome if the domestic courier companies in Sri Lanka cover a large customer base and thus earn economies of scale as in China Ding, (2013). Another cause for concern factor in the domestic courier industry of Sri Lanka is the volume of deliveries. The volume received to deliver during this pandemic keeps fluctuating depending on the current pandemic situation in the country. For instance, since people are restricted in unnecessary travelling; they avoid going shopping and make their orders online and get the items delivered to them by domestic courier companies. When travel restrictions are listed courier companies have high volumes of deliveries for which effective operation of deliveries take place. During the start of the pandemic delivery systems also crashed as the country had very limited experience with digital platforms and paperless transactions. However, they picked up quickly, and small and medium enterprises were quick to utilize social media and Smartphone apps to deliver goods to customers Wang, (2021)

Work Life Balance is very important for couriers to achieve their potential in the delivery service. Since the current demand is for last mile delivery, the domestic courier companies need to recruit couriers to work normal work time plus sometimes overtime. To achieve targets the main motivation for couriers is not only pay and incentives but job satisfaction and work life balance. Job satisfaction is a disposition which ought to separate the substances of intellectual assessments like effect (feeling), convictions, and conduct Weiss, (2002). The equilibrium of work life is a significant factor for companies and workers. That is a result of a fruitful WLB, workers can handle their lives, lessen their work pressure, and increase work fulfillment Tara and Jyotsna, (2010).

The courier services industry is as yet reliant upon manual work measures and particularly in Indonesia portrayed as labour intensive. Along these lines, human variables play a focal part in all cycles in this industry. The connection of the courier service industry with the client local area services is likewise moderately high and seriously furthermore, reciprocal Setyo et al, (2019).

As indicated by Subhasree and Misra, (2013) that WLB is "the degree to which an individual can limit clashes between the requests of work and those that are not work." By and by, the above conditions are hard to execute in associations on account of the overall perspective on resistance between diminishing work interest and better. Work Life Balance experienced by workers is demonstrated to be ready to essentially expand the commitment of hierarchical execution and simultaneously develop their connection to the organization where they work (Ioan et al., 2010). From the above literature reviews, it can be deduced that work life balance has become a crucial factor in a courier industry employee's lives because balancing work and family matters are of great importance to a content life. Domestic courier industry in Sri Lanka has a work life balance factor as a barrier in the operations element because couriers cannot maintain work life balance in the domestic courier industry. This is due to the fact that couriers work beyond their normal working time. Even though couriers are given flexible working hours due to financial benefits with more working hours, couriers prefer to work long hours. When they do this, after some time

they are faced with work stress and family issues which make them sick and less productive. Thus, this affects the operation of the domestic courier business of Sri Lanka.

4.2.4 Economic challenges (EC)

Managing the fleet 0.930-Fleet management is a training that permits associations to oversee and organize conveyance vehicles to accomplish ideal proficiency and diminish costs. The act of Fleet management is utilized for vehicles as well as to screen and record couriers and delivery personnel. It requires an arrangement of innovations that make it simpler for the fleet supervisor to facilitate the exercises directly from fuel management to arranging the routes that can be made effortlessly using fleet management software. Fleet management software goes about as the main issue to screen in any case tedious cycles consistently, and consequently goes about as a basic part in settling on proficient business choices Spitler (2020). While the developed nations are coordinating fleet management efficiently to meet the last mile demand of the customers; Sri Lanka's domestic courier industry is still finding fleet management as a barrier to their smooth functioning; this is because of the lack of financial aid and expertise in fleet management. The use of sophisticated technology such as the GPS Tracking system, telematics and maintenance software are highly expensive systems to be installed by the domestic courier industry in Sri Lanka. Thus, it will act as a barrier to the effective transport function of the business of courier companies.

Inflation in cost of line hauls 0.888-According to ORTEC Business Dictionary, In logistics, Line Haul alludes to the development of cargo with any method of transport via land, air or stream between far off urban areas. Cargo can change in volume and weight, from little documents to small pallets. Couriers Express and Parcel (CEP) suppliers and 3PL Less than Truckload (LTL) transporters gather cargo from different senders at a given terminal. Sri Lankan domestic courier industry faces a barrier in transport in terms of line haul as Sri Lanka is insufficient line hauls to warehouse and effectively transport products.

4.2.5 Financial challenges (FC)

Profit margin 0.799, collecting and managing COD 0.684 and on time delivery 0.675-Sri Lankan domestic courier industry faces finance as a barrier to its functioning. Sri Lanka is a developing country and because of the current pandemic problem Sri Lanka's economy is facing a downfall in its economy. Courier companies face financial barriers in terms of COD, ON TIME DELIVERY AND PROFIT. Cash on delivery is a great hassle for couriers because collecting money at the point of delivering a package is a very hideous task. Sometimes if deliveries are delayed being delivered due to unavoidable situations, the customer might refuse to pay and then collect the package and the domestic courier companies will be responsible for that money and package and be answerable to the sender of the package. Domestic courier industry doesn't make large profits to be a very lucrative industry. They incur more losses than profits as there are more players in the industry trying to compete by providing services at a lower cost. Due to less entry barriers and more e-commerce businesses have attracted more companies to start courier business. This has created a price war among existing and new courier companies. Reducing prices to gain more market share has been creating a difficult situation in the industry for its survival.

4.2.6 Human Resource challenges (HR)

Recruitment and training 0.927-Training is a significant component in HRM practices as it empowers to help up efficiency and equilibrium the advantages of usefulness against the training cost Mudor, (2011). As per Harel and Tzafrir, (1999) training expands workers satisfaction with their present positions and work environment. Sri Lanka's domestic courier industry faces an HRM barrier in the form of training provided for their workers. As training can be an expensive factor, it will add to the cost of operations. Domestic courier companies in Sri Lanka try their best to employ couriers with or without vehicles and provide them routes and they might get initial training on the routes, COD collection, connotes entering maximum a week but thereafter couriers are required to work independently as training on the job is an added cost to the company. Without proper training couriers will not perform the delivery task efficiently, thus causing a drop in company's productivity. Due to lack of pay, white collar jobs preferred by the young generation, higher pay from other industries, lack of work life balance, lack of flexibility, less job recognition and a bleak career path are some of the main concerns in recruiting and

retaining operational staff in the courier industry. Alternatively, managing the riders in an efficient way is the key to success of the courier companies. Riders represent the companies. Riders spend most of their time on the field. Operational managers face many barriers when handling them to be more efficient.

4.2.7 Threat from other industries (TO)

Unhealthy competition is 0.861 and adopting ICT infrastructure is 0.630. Digital mobilized industry acts as a competitive barrier to the domestic courier industry's functioning. For instance, Uber and pick me also have their own delivery service for food and grocery items apart from transporting passengers from one place to another. They are in competition with courier service deliveries. Mobility industries are contributing on their digitization and examination drives to drive functional efficiency in the midst of changing interest designs Ringland et al, (2019). Digitally mobilized industry has the means to spend heavily on automation and transportation and thus have a comparative advantage in technology over the domestic courier industry. Threat from other industries such as Uber, Pick me, Daraz and other digital mobility companies and e-commerce companies have started delivery services which are similar to courier services. Pick me flash, Uber connect are some of them. Consequently, in the initial stage Daraz was offering high volume businesses to the courier companies; however, since Daraz started their own delivery crew DEX the business for courier companies has reduced. In future if Daraz starts a courier company as forward integration as their strategy, courier companies will face a high threat.

4.2.8 Social challenges (SC)

Retaining skilled staff is 0.920. Availability of skilled workers have become a social barrier to the domestic courier industry of Sri Lanka. Employing skilled workers has become a social obstacle because people don't possess sufficient financial and educational resources to make themselves skillful in the work they would be employed for. For instance, the domestic courier industry employs couriers who can ride or drive vehicles but however being skillful and knowledgeable in handling cash, connotes, routes, being flexible and versatile is added skills that should also be present in couriers.

4.2.9 Customer Retention (CR)

Customer retention is 0.976. Lately, the progressing fame of internet business has become a main impetus behind the improvement of courier services both in Poland and around the world. To confront developing competition in the courier market and live up to customers' desires, one of the urgent key objectives of courier service is to offer excellent assistance (Gulc, 2020). Domestic courier industry of Sri Lanka is facing customer retention as a barrier for the functioning of the business. This is mainly because customers' expectations and demands from the courier companies keep changing faster by every minute. The developed nations are striving at minute speed to vary their delivery services in a most sophisticated, efficient way. Since insufficient investment in latest technology has placed the domestic courier industry at a vast disadvantage; thus, domestic courier industries are struggling to retain the existing customers and get new customers.

4.3 Business Prospect for Courier Industry

Using 7 Likert scale questions, the opinion of domestic courier industry personnel was derived on the future industry prospect. The results are summarized in Table 11.

Table 11: Opinion of industry personnel on business prospect for courier Industry

Business Prospect for Courier Industry	Mean Value
Business opportunities in e-commerce sector	4.25
Necessity of a trade association	3.50
Business opportunities in outstation movements	3.00
Collaboration opportunities with international courier companies	3.00
Competition with the postal services to gain more market share	2.63
Return on investment in terms of net profit	2.50
Sustainable business direction	2.17

4.3.1 Business opportunities in e-commerce sector

The nature of the courier business has been changing since the huge development of the e-commerce sector. Courier companies have been focusing more on e-commerce business with their traditional mail and parcel delivery businesses. Courier companies have been investing in ICT applications, software's and devices. Consequently, the operational requirements are also changing from the majority of motor bikes to trishaws, cars, vans and Lorries. These data show the need for preparing a more e-commerce-oriented business rather than mail delivery. Further the collecting and transferring cash has been an extra burden for the courier industry. The average daily cash collection exceeds over 100000/- per rider. Using digital wallets or cashless payment methods can increase the convenience of the cash collection and decrease the risk. The general question whether the domestic courier industry has business opportunities in the e-commerce sector, showed a significant rise above the mean level which was 4.25. From this data it could be surmised that the domestic courier industry has opportunities in the e-commerce sector.

4.3.2 Necessity of a trade association

Participants believe and hope that most of their barriers to efficient performance can be solved by establishing an association. Some managers plan to form associations for many years. Some expert opinion says they are planning to form with the international air courier association of Sri Lanka, which handles only the international courier company issues. Though we are living in the open market economy; there is unlikely they can bring a solution for the barriers due to competition such as unhealthy price war, shortage of skilled labor. Instead, the domestic courier industry can work united to solve issues which they face on a daily basis such as COD collection, connotes issues, traffic laws and environmental issues.

4.3.3 Business opportunities in outstation movements

Many courier companies are focusing on Colombo district and western province only. There are business opportunities in outstation because of development in the rural and villages.

4.3.4 Collaboration opportunities with international courier companies

Collaboration with international courier companies would give competitive advantage in terms of larger networks and higher movements. International courier companies have invested directly in the local courier companies and have partnered or franchised with domestic courier companies as they can foresee the advantages.

4.3.5 Competition with the postal services to gain more market share

Lack of technology, service failures and accountability in the Sri Lanka postal services has given opportunity for the domestic courier companies. However, according to the expert opinion Sri Lanka post still holds over 60% of market share in the domestic postal and courier services. Comparatively, since the mean is below 3, this factor is not given much importance.

4.3.6 Return on investment in terms of net profit

According to the responses for the questionnaire and experts' opinions, return on investment is less in the domestic courier industry when operating island wide. This is due to higher operational cost. Break Even point can be reached only after more movements. However, this fact is not considered a factor to influence the domestic courier industry since the mean obtained for this factor is below 3.

4.3.7 Sustainable business direction

Due to lack of return on investment and threat from other industries; the domestic courier companies are struggling to sustain in the market. Only leading domestic courier companies are doing well. New entrants are not sustaining for a very longer period. However domestic courier industry infers it moves in sustainable directions as the mean value obtained for this factor is below 3.

CHAPTER FIVE

5. CONCLUSION, RECOMMENDATION AND FUTURE RESEARCH DIRECTIONS

5.1 Conclusion

With the advent of proliferation of economic activities backed by industrialization and increased consumer demand, logistic industry has been playing a critical role in linking production unit with the consumer units. Delivery services, both international and domestic level engage in different leg in the supply chain are utmost important and play a pivotal role in reaching the final demand point. As the service quality in terms of cost, and time area the forefront of a economic system demanding a just in time requirement, domestic courier services have now emerged to deliver the last mile delivery of the distributional channel. This study aimed at identifying barrier to the business functioning of domestic courier industry in Sri Lanka. A literature review was conducted to identify existing barriers in other country context. As literature focusing on challenges, issues and barriers for the functioning of the domestic courier industry was limited, two interviews were conducted with two courier industry managers to further identify barrier in Sri Lanka context. A questionnaire was developed and deployed to 100 randomly selected courier industry managers, and 48 responses were returned as complete. An exploratory factor analysis was conducted. The analysis results revealed nine (9) barriers to the business functioning of the domestic courier industry. They are of multifaceted and can be broadly factored into barrier related to regulatory, human resource, transportation related traffic law, information and communication technology, business operational, economic, and financial, competition, social and customer base. Courier industry player of the view that the barriers can be solved by being more rigorous in the operations and delivery service; collaboration among players, providing enhanced services aided by e-commerce platforms and working closely as a unionized industry under a regulatory framework.

5.2 Recommendation

Some variables were examined for barriers for the business functioning of domestic courier industry in terms of the mean value. Such variables are pricing, adopting ICT infrastructure (smart phones, scanners, GPS, tracking), collecting and managing cash on deliveries, managing riders, labour shortage, regulatory acceptance level, the threat from the other competitors, larger and diversified freight and the regulatory lockdown permits have mean of or over three. To survive and run smooth operations in the domestic courier industry, such variables have to be managed well and the issues arising from these barriers have to be alleviated to be succeeding in the domestic courier industry. On the other hand, from the study many variables were identified as barriers to the business function of the domestic courier industry. Variables such as inflation in cost of labour, Labour laws, Automation, IT adaptation, Carbon footprint output, Managing the fleet, Recruitment & training, Retaining skilled staff and Customer retention have been identified as having Rotated Component Matrix over 0.9. Consequently, it is recommendable domestic courier companies to implement strategies to mitigate the barriers caused by these variables for the business functioning of the domestic courier industry.

Domestic courier industry has more opportunities in the e-commerce sector. As for the researcher's identification, domestic courier industry needs to invest and concentrate in serving the e-commerce sector more diligently to move the domestic courier industry to a successful path.

The barriers to the business functioning of the domestic courier industry can be solved in unison by forming a domestic courier association. Since the courier trade has been identified as the most important segment in the entire logistics management industry; forming an association can give more recognition and help to solve the issues with the regulatory system. Further forming a courier association can help to reduce the price war among the courier companies, increase the profit margins, increase the efficiency, and increase the standards in the industry and also minimize threats from the other industry as well. In addition to that courier companies are requesting the regulatory body to accept the courier services as an essential service in emergency situations.

5.3 Limitation of the study

This research has few limitations. Since this research is based on the domestic courier industry, collecting data for measuring the efficiency and performance was not possible due to inaccessibility to secondary data, which are not properly accounted and organized, of courier companies. Many domestic courier companies do not maintain data about their performance due to lack of technology and transparency in providing information. Since most of the domestic courier companies are based in the Western province, the data collected are limited to those courier companies in this province only.

Therefore a numerical evidences on courier industry in Sri Lanka cannot be produced in terms of their market share, permanent staff, annual turnover, and other key parameters related to logistics performance, such as unit cost, Lead-time, delivery network and other related operational characteristics of the industry.

5.4 For future research direction

At present the actual number of movements, financial figures and other relevant data are unavailable of courier companies which contribute to the limitation of this study. This study has been the initial academic research conducted about the barriers to the business functioning of the domestic courier industry in Sri Lanka. The outcome of this research can be utilized for any future academic research, business projects, business decision making and for the benefit of the domestic courier industry in Sri Lanka. Future research can be focused on a case study research by electing few courier companies to measure operational activities and productivity, which would further help justifying the barriers identified in this study.

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Annex 1: Pilot – Interview transcript

Respondent 1: Serving as director in both international and domestic courier industry for forty years. He was the past president of international courier association.

Q1 Do you think domestic courier industry has the potential to grow in terms of market share with the postal services?

Q2 What the economical challenges faced by the domestic courier industry?

Q3 What are the regulatory challenges faced by the domestic courier industry?

Respondent 2: Serving as a general manager for a domestic courier company for more than twenty years.

Q1 What are the financial challenges faced by the domestic courier industry?

Q2 What is the impact of e-commerce industries on domestic courier industry?

Q3 Do you think domestic courier industry facing labour shortage?

Respondent 3: Served as a general manager in three different domestic courier companies and counts experience over twenty years in the field.

Q1 Are the domestic courier companies competent to face threats from other industries in the service sector?

Q2 Can the domestic courier industry gain more market share in outstation movements?

Q3 Does the island wide line haul network operation has more constrains?

Respondent 4: Country manager of an international courier company and head of the domestic courier department. He has completed his Masters in Australia with over 15 years of experience in international and local courier industry.

Q1: How will you benchmark domestic courier industry in Sri Lanka in comparison to any other domestic courier industry of other countries?

Q2: Can the domestic courier industry adopt the ICT infrastructure to its daily run its operations?

Q3: Are you happy with the customs procedures and import duty processes applied in Sri Lanka customs when getting import deliveries?

Respondent 5: General Manager of a 10 years old domestic courier company with industry experience of only 3 years. This person has more experience in international courier industry and the company has recently started focusing more on domestic courier industry.

Q1: What are the operational challenges faced by the domestic courier industry?

Q2: How advance is the ICT system in the domestic courier industry compared to international courier industry?

Q3: What are the strategies do you implement to provide better customer service?

Respondent 6: As a manager has over 10 years' experience in the ICT sector. This company focuses more on e-commerce deliveries through a digital platform. They use 80% of outsourced staff to run their operation efficiently.

Q1: What is the accountability when using outsourced staff to run their operation?

Q2: Do you face any challenges in terms of collecting COD from outsourced staff?

Q3: Do you gain returns on investment in terms of capital expenditure on ICT system and products?

Annex 2: Questionnaire

Barriers to the efficient performance of the domestic courier industry in Sri Lanka

Zaharan Ismadeen 199177C, MBA in Supply Chain Management, University of Moratuwa, Sri Lanka.

SA: Strongly agree A: Agree N: Neutral D: Disagree SD: Strongly disagree

Questions	S A	A	N	D	S D
Has Domestic courier industry got potential in terms of business opportunities in e-commerce sector?					
Has the Domestic courier industry got more business opportunities in outstation movements?					
Has the Domestic courier industry got potential in return on investment in terms of net profit?					
Has the Domestic courier industry got potential in collaboration with international courier companies?					
Can the Domestic courier industry compete with the postal services to gain more market share?					
Has the Domestic courier industry barrier to its efficiency in terms unhealthy competition?					
Has the Domestic courier industry barrier to its efficiency in terms of inflation in cost of labour?					
Has the Domestic courier industry barrier to its efficiency in terms of inflation in cost of line hauls?					
Has the Domestic courier industry barriers to its efficiency in terms of laws related to taxation?					
Has to the Domestic courier industries efficient performance in terms of collecting and managing cash on deliveries?					
Has to the Domestic courier industries efficient performance in terms of profit margins?					
Has the Domestic courier industries efficient performance in terms of pricing?					
Has to the Domestic courier industries efficient performance in terms of debt collecting?					
Has the Domestic courier Industry in terms of managing riders?					
Has the Domestic courier Industry barrier in terms of on time delivery?					
Has the Domestic courier Industry experience issue in terms of managing the fleet?					
Has the Domestic courier Industry lack of delivery density?					
Is the Domestic courier Industry lack of larger and diversified freight?					
Is labour shortage a barrier to the domestic courier industry?					
Does the retaining skilled staffing the domestic courier industry barriers to its efficient performance?					
Is the recruitment and training barrier in the domestic courier industry?					
Do the technological barriers create barriers to the efficiency in the domestic courier industry in terms of ICT infrastructure (smart phones, scanners, GPS, tracking)?					

Is the automation barrier to the domestic courier industry?					
Does the adaptation of AI (artificial intelligence technological a barrier the domestic courier industry)?					
Does the regulatory system in Sri Lanka accept courier services as essential services in any emergency situations?					
Are the traffic laws barriers to the efficient performance in the domestic courier industry in terms of?					
Are the labour laws' barriers to the domestic courier industry?					
Has the lockdown permits barrier to the domestic courier industry?					
Do the job recognition barrier to the domestic courier industry?					
Do the work life balance barrier to the domestic courier industry?					
Do the thieving barriers to the domestic courier industry?					
Do you think that domestic courier industry is moving in a sustainable direction?					
Do the carbon footprint output barrier to the domestic courier industry in terms of?					
Do the packing material barrier to the domestic courier industry in terms of?					
Do the customer retention barriers to the efficiency in the domestic courier industry?					
Has the Impact of Covid-19 Pandemic created barriers to the efficient performance in the domestic courier industry in terms of new entrants from other industries?					
Have the threat from the other competitors (Daraz, Uber, Pick me) created barriers to the efficient performance of the domestic courier industries?					
Does domestic courier industry need an association to solve its problems untidily?					

Annex 3: Data Analysis Output

Descriptive Statistics

	N		Range		Mean		Std. Deviation		Variance		Skewness		Kurtosis	
	Statistic		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
comptn	48	3.00	2.8750	.19890	1.37802	1.899	.947	.343	-1.154	.674				
Lbrcost	48	3.00	2.5000	.16308	1.12987	1.277	1.847	.343	1.471	.674				
Linehaul	48	3.00	2.2500	.12094	.83793	.702	3.113	.343	8.025	.674				
COD	48	3.00	3.2500	.21574	1.49467	2.234	.349	.343	-1.962	.674				
Profit	48	3.00	2.7500	.18948	1.31278	1.723	1.192	.343	-.605	.674				
Pricing	48	3.00	3.4375	.21861	1.51456	2.294	.086	.343	-2.081	.674				
Debt	48	3.00	2.6250	.17771	1.23124	1.516	1.483	.343	.206	.674				
RidersM	48	4.00	3.2083	.22273	1.54312	2.381	.288	.343	-1.884	.674				
Otdeliv	48	4.00	2.9583	.21255	1.47256	2.168	.659	.343	-1.491	.674				
FleetM	48	4.00	2.2083	.12618	.87418	.764	2.762	.343	7.036	.674				
Density	48	4.00	2.7083	.19515	1.35204	1.828	1.099	.343	-.622	.674				
Volume	48	3.00	3.0000	.20628	1.42918	2.043	.730	.343	-1.533	.674				
Labour	48	3.00	3.1250	.21185	1.46774	2.154	.533	.343	-1.792	.674				
Skilled	48	3.00	2.7500	.18948	1.31278	1.723	1.192	.343	-.605	.674				
RecTrng	48	4.00	2.4583	.16832	1.16616	1.360	1.701	.343	1.303	.674				
ICT	48	4.00	3.4167	.23413	1.62210	2.631	-.094	.343	-1.917	.674				
Autom	48	4.00	2.5833	.18314	1.26883	1.610	1.370	.343	.136	.674				
AI	48	3.00	2.6250	.17771	1.23124	1.516	1.483	.343	.206	.674				
LbrL	48	4.00	2.5833	.18314	1.26883	1.610	1.370	.343	.136	.674				
Lkdnpass	48	3.00	3.0625	.20928	1.44996	2.102	.630	.343	-1.675	.674				
Jobrcg	48	3.00	2.8750	.19890	1.37802	1.899	.947	.343	-1.154	.674				
WLB	48	3.00	2.8750	.19890	1.37802	1.899	.947	.343	-1.154	.674				
Thfnng	48	4.00	2.7083	.19515	1.35204	1.828	1.099	.343	-.622	.674				
crbn	48	3.00	2.3750	.14472	1.00266	1.005	2.342	.343	3.633	.674				
Csretn	48	3.00	2.8750	.19890	1.37802	1.899	.947	.343	-1.154	.674				
Covid19	48	4.00	2.7917	.21045	1.45804	2.126	.809	.343	-1.137	.674				
Threat	48	4.00	3.0833	.21846	1.51353	2.291	.468	.343	-1.731	.674				
Tax	48	3.00	2.5000	.16308	1.12987	1.277	1.847	.343	1.471	.674				
Esential	48	3.00	3.1250	.21185	1.46774	2.154	.533	.343	-1.792	.674				
Traffic	48	3.00	2.6250	.17771	1.23124	1.516	1.483	.343	.206	.674				
packing	48	3.00	2.7500	.18948	1.31278	1.723	1.192	.343	-.605	.674				
Valid N (listwise)	48													

Exploratory Factor Analysis: Model 1

Communalities

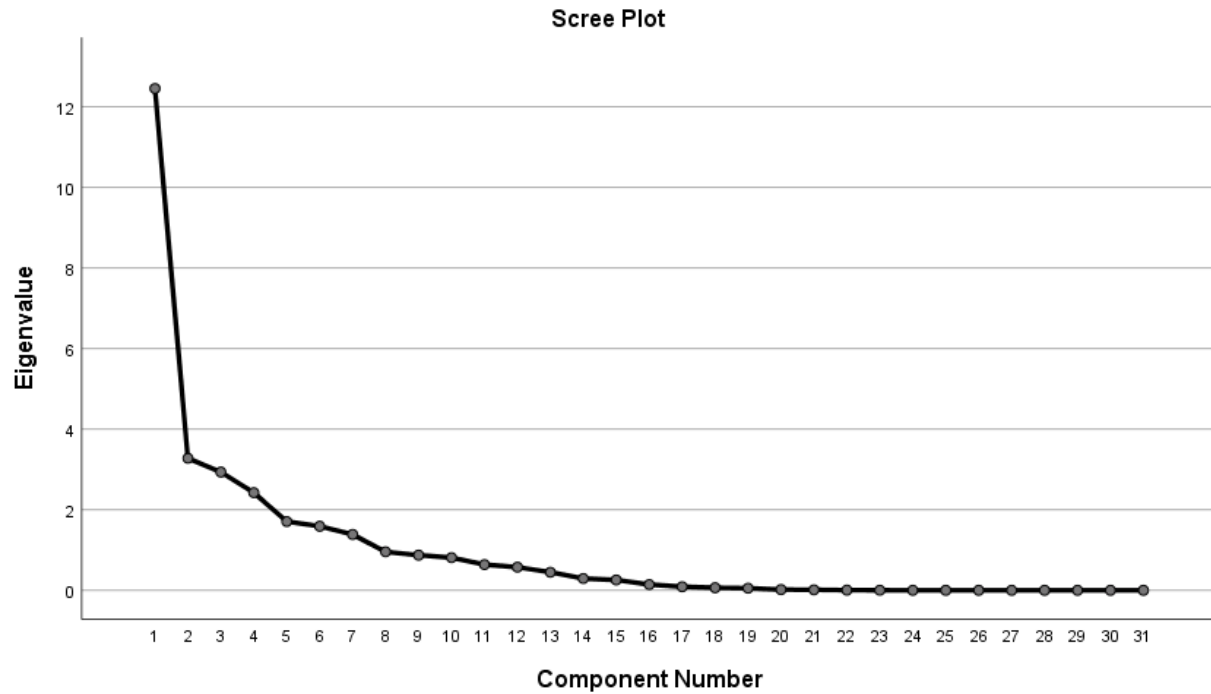
	Initial	Extraction
comptn	1.000	.868
Lbrcost	1.000	.979
Linehaul	1.000	.903
COD	1.000	.947
Profit	1.000	.912
Pricing	1.000	.730
Debt	1.000	.871
RidersM	1.000	.851
Otdeliv	1.000	.962
FleetM	1.000	.871
Density	1.000	.958
Volume	1.000	.944
Labour	1.000	.835
Skilled	1.000	.905
RecTrng	1.000	.884
ICT	1.000	.900
Autom	1.000	.915
AI	1.000	.926
LbrL	1.000	.917
Lkdnpass	1.000	.770
Jobreg	1.000	.902
WLB	1.000	.878
Thfng	1.000	.810
crbn	1.000	.887
Csretn	1.000	.891
Covid19	1.000	.895
Threat	1.000	.869
Tax	1.000	.940
Esential	1.000	.893
Traffic	1.000	.904
packing	1.000	.878

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.454	40.173	40.173	12.454	40.173	40.173	5.055	16.306	16.306
2	3.276	10.568	50.741	3.276	10.568	50.741	4.465	14.405	30.711
3	2.934	9.465	60.206	2.934	9.465	60.206	3.928	12.670	43.382
4	2.422	7.813	68.019	2.422	7.813	68.019	3.484	11.239	54.621
5	1.706	5.503	73.522	1.706	5.503	73.522	2.533	8.170	62.791
6	1.590	5.129	78.651	1.590	5.129	78.651	2.456	7.924	70.714
7	1.386	4.470	83.120	1.386	4.470	83.120	2.428	7.831	78.546
8	.955	3.080	86.201	.955	3.080	86.201	1.729	5.576	84.122
9	.873	2.815	89.016	.873	2.815	89.016	1.517	4.894	89.016
10	.810	2.614	91.630						
11	.638	2.057	93.687						
12	.574	1.851	95.538						
13	.449	1.447	96.985						
14	.292	.942	97.927						
15	.257	.830	98.757						
16	.143	.460	99.217						
17	.089	.287	99.504						
18	.064	.205	99.710						
19	.052	.168	99.877						
20	.019	.060	99.937						
21	.013	.041	99.979						
22	.005	.016	99.994						
23	.002	.006	100.000						
24	8.133E-16	2.623E-15	100.000						
25	4.908E-16	1.583E-15	100.000						
26	2.866E-16	9.245E-16	100.000						
27	-1.076E-16	-3.472E-16	100.000						
28	-2.994E-16	-9.658E-16	100.000						
29	-4.150E-16	-1.339E-15	100.000						
30	-6.985E-16	-2.253E-15	100.000						
31	-1.915E-15	-6.178E-15	100.000						

Extraction Method: Principal Component Analysis.



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.856								
Volume	.835								
Thfng	.819								
Jobrcg	.785								
COD	.759								
Lkdnpass	.735								
Lbrcost	.733				-.431				
Profit	.728								
Threat	.706	-.435							
LbrL	.699				-.484				
Traffic	.684	-.418							
RidersM	.677			.454					
Esential	.673								
Density	.673		-.444						
Pricing	.655								
Linehaul	.650		.407						
Otdeliv	.632					.623			
FleetM	.623		.492						
Covid19	.604						-.453		
Tax	.592		.560						
Labour	.579			.412					
ICT	.555								
comptn	.491	-.425							
AI	.452	.747							
Autom	.472	.732							
crbn	.476	.503							
packing	.488		-.621						
Debt	.516		.544	-.470					
RecTrng	.407			.599					
Skilled				.540					.440
Csretn							.421		.463

Extraction Method: Principal Component Analysis.
a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Lbrcost	.910								
LbrL	.882								
Traffic	.796								
Thfng	.691								
RidersM	.532						.450	.442	
Threat	.423				.403	.402			
Tax		.908							
Debt		.898							
FleetM		.709				.448			
Profit		.701			.427				
Linehaul		.698		.488					
Pricing		.506			.401				
packing			.885						
crbn			.852						
Density			.739						
Volume	.488		.586		.430				
WLB	.540		.564						
Esential	.487		.517					-.464	
AI				.913					
Autom				.906					
ICT				.606	.421		.438		
Jobreg			.488	.541					
comptn					.878				
Covid19						.847			
Lkdnpass						.630			
Skilled							.921		
RecTrng						.481	.616		
Labour							.495		-.464
Otdeliv								.641	
COD	.477						.438	.550	
Csretn									.912

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 19 iterations.

Exploratory Factor Analysis: Model 2

After removing the variable Pricing 0.730 and Lockdown pass 0.770

Communalities

	Initial	Extraction
comptn	1.000	.915
Lbrcost	1.000	.977
Linehaul	1.000	.946
COD	1.000	.953
Profit	1.000	.923
Debt	1.000	.862
RidersM	1.000	.849
Otdeliv	1.000	.970
FleetM	1.000	.934
Density	1.000	.952
Volume	1.000	.947
Labour	1.000	.830
Skilled	1.000	.938
RecTrng	1.000	.920
ICT	1.000	.887
Autom	1.000	.949
AI	1.000	.956
LbrL	1.000	.907
Jobrcg	1.000	.860
WLB	1.000	.883
Thfng	1.000	.813
crbn	1.000	.898
Csretn	1.000	.925
Covid19	1.000	.834
Threat	1.000	.859
Tax	1.000	.928
Esential	1.000	.893
Traffic	1.000	.894
packing	1.000	.866

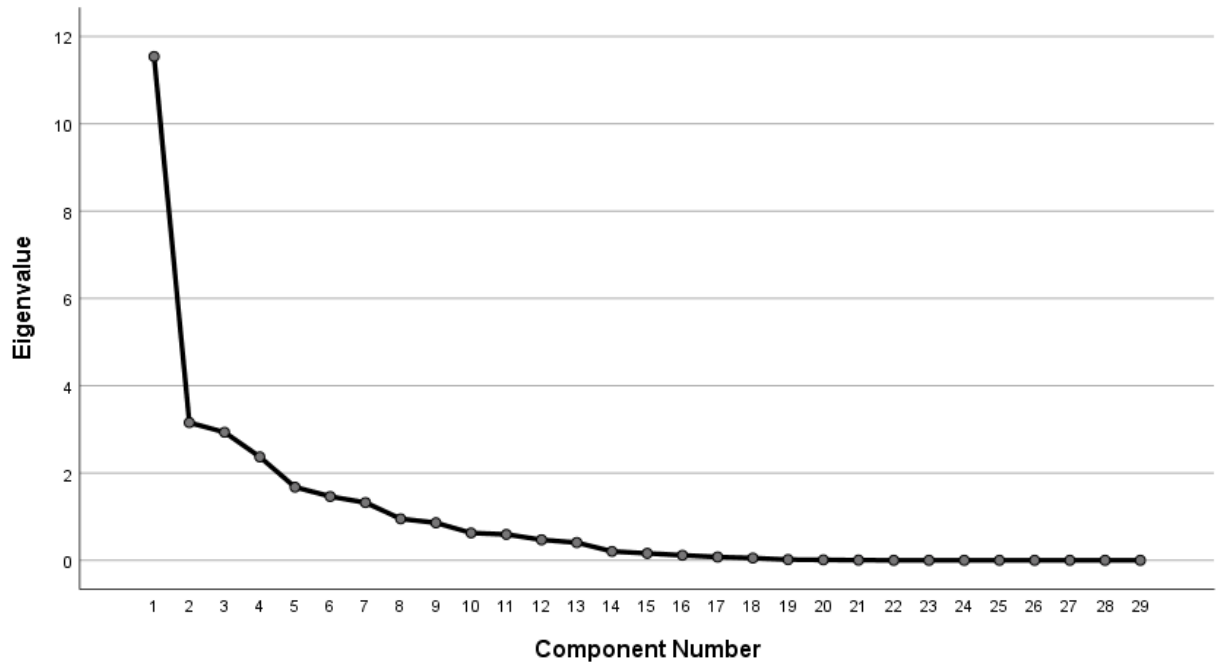
Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.540	39.794	39.794	11.540	39.794	39.794	5.192	17.904	17.904
2	3.154	10.875	50.669	3.154	10.875	50.669	4.185	14.433	32.336
3	2.933	10.115	60.784	2.933	10.115	60.784	3.818	13.165	45.502
4	2.370	8.171	68.955	2.370	8.171	68.955	3.321	11.452	56.953
5	1.676	5.780	74.735	1.676	5.780	74.735	2.411	8.314	65.267
6	1.462	5.041	79.776	1.462	5.041	79.776	2.072	7.144	72.411
7	1.323	4.562	84.338	1.323	4.562	84.338	2.017	6.956	79.367
8	.950	3.276	87.614	.950	3.276	87.614	1.734	5.980	85.347
9	.860	2.965	90.579	.860	2.965	90.579	1.517	5.232	90.579
10	.627	2.161	92.741						
11	.593	2.046	94.787						
12	.470	1.619	96.407						
13	.407	1.402	97.809						
14	.204	.704	98.513						
15	.159	.549	99.062						
16	.115	.398	99.460						
17	.075	.259	99.719						
18	.051	.177	99.896						
19	.017	.058	99.954						
20	.010	.033	99.987						
21	.004	.013	100.000						
22	1.631E-15	5.624E-15	100.000						
23	7.645E-16	2.636E-15	100.000						
24	5.873E-16	2.025E-15	100.000						
25	4.047E-16	1.395E-15	100.000						
26	1.185E-16	4.088E-16	100.000						
27	5.960E-18	2.055E-17	100.000						
28	-2.555E-16	-8.810E-16	100.000						
29	-6.283E-16	-2.166E-15	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.862								
Volume	.840								
Thfng	.826								
Jobrcg	.791								
COD	.762								
Lbrcost	.734				-.401				
Profit	.720								
LbrL	.706				-.463				
Threat	.685	-.440							
Traffic	.684	-.434							
RidersM	.682			.429					
Esential	.676								
Density	.671	.413	-.430						
Linehaul	.661		.418						
FleetM	.627		.499						
Tax	.597		.555	-.402					
Covid19	.583						.509		
ICT	.581			.423					
Labour	.571	-.425							
comptn	.482	-.429							
AI	.477	.717							
Autom	.495	.704							
crbn	.494	.503							
packing	.481		-.613						
Debt	.502		.542	-.477					
RecTrng	.414			.619			.481		
Skilled				.552					.479
Otdeliv	.610					.742			
Csretn						.412			.501

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Lbrcost	.913								
LbrL	.880								
Traffic	.834								
Thfng	.682								
Esential	.554		.503						
Threat	.510								
Tax		.907							
Debt		.888							
FleetM		.728						.518	
Linehaul		.722		.415				.424	
Profit		.711							
packing			.886						
crbn			.864						
Density			.756						
Volume	.526								
WLB	.548		.553						
AI				.927					
Autom				.923					
ICT				.598		.437	.406		
Jobrcg			.505	.519					
Otdeliv					.690	.406			
COD	.435				.678				
RidersM	.491				.609				
RecTrng					.599		.412	.525	
comptn						.890			
Skilled							.921		
Labour							.484		-.460
Covid19	.415							.762	
Csretn									.935

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 17 iterations.

Exploratory Factor Analysis: Model 3

After removing the variable thieving 0.813 and short of labour 0.830

Communalities

	Initial	Extraction
comptn	1.000	.915
Lbrcost	1.000	.966
Linehaul	1.000	.940
COD	1.000	.941
Profit	1.000	.918
Debt	1.000	.870
RidersM	1.000	.836
Otdeliv	1.000	.971
FleetM	1.000	.932
Density	1.000	.949
Volume	1.000	.959
Skilled	1.000	.928
RecTrng	1.000	.924
ICT	1.000	.900
Autom	1.000	.955
AI	1.000	.961
LbrL	1.000	.947
Jobrcg	1.000	.871
WLB	1.000	.904
crbn	1.000	.916
Csretn	1.000	.964
Covid19	1.000	.851
Threat	1.000	.849
Tax	1.000	.928
Esential	1.000	.892
Traffic	1.000	.890
packing	1.000	.859

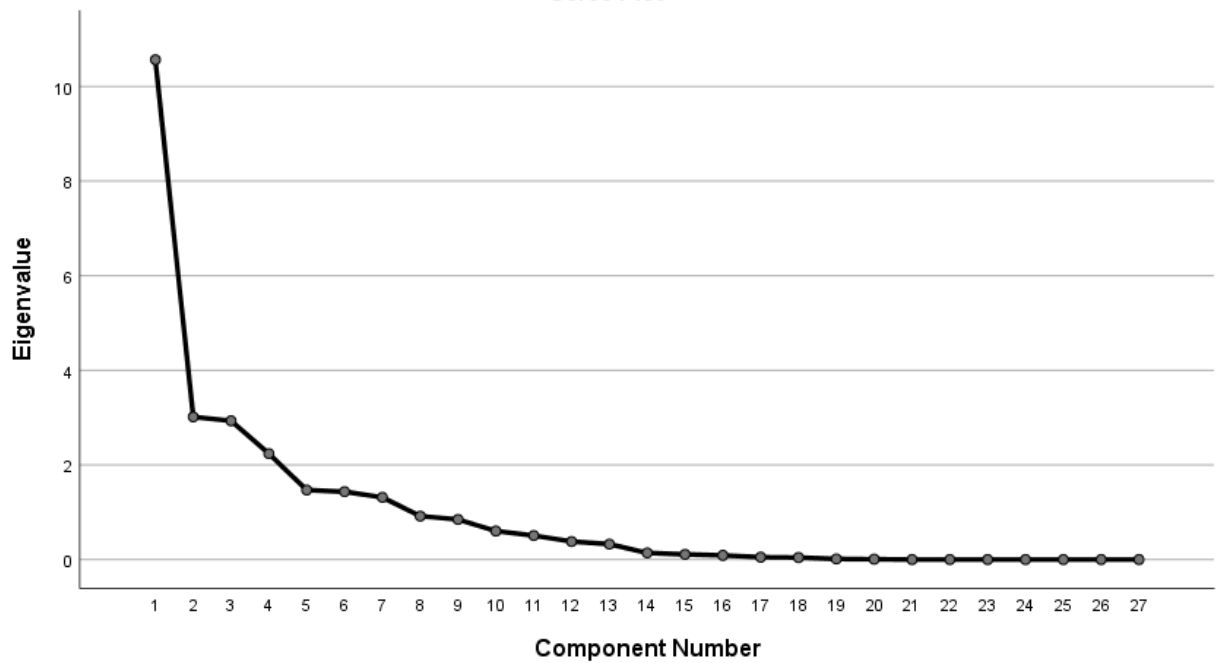
Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.567	39.135	39.135	10.567	39.135	39.135	4.427	16.396	16.396
2	3.016	11.171	50.306	3.016	11.171	50.306	4.086	15.132	31.528
3	2.933	10.862	61.168	2.933	10.862	61.168	3.722	13.786	45.314
4	2.238	8.288	69.456	2.238	8.288	69.456	3.176	11.763	57.077
5	1.469	5.441	74.897	1.469	5.441	74.897	2.816	10.429	67.505
6	1.434	5.313	80.210	1.434	5.313	80.210	1.941	7.190	74.695
7	1.314	4.866	85.076	1.314	4.866	85.076	1.665	6.166	80.862
8	.918	3.401	88.477	.918	3.401	88.477	1.519	5.627	86.489
9	.847	3.136	91.613	.847	3.136	91.613	1.383	5.124	91.613
10	.602	2.231	93.843						
11	.507	1.876	95.720						
12	.381	1.411	97.131						
13	.326	1.207	98.337						
14	.140	.519	98.857						
15	.109	.403	99.260						
16	.088	.327	99.587						
17	.050	.186	99.773						
18	.042	.155	99.928						
19	.012	.046	99.974						
20	.007	.026	100.000						
21	2.096E-15	7.762E-15	100.000						
22	7.183E-16	2.660E-15	100.000						
23	4.734E-16	1.753E-15	100.000						
24	1.614E-16	5.977E-16	100.000						
25	-2.151E-16	-7.967E-16	100.000						
26	-4.877E-16	-1.806E-15	100.000						
27	-6.786E-16	-2.513E-15	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.865								
Volume	.841								
Jobrcg	.805								
COD	.746			.425					
Lbrcost	.721	-.446							
Profit	.712								
LbrL	.693				-.466				
Density	.689		-.438						
Linehaul	.682		.412						
Esential	.681								
Traffic	.669	-.490							
RidersM	.669			.527					
Threat	.667	-.444							
FleetM	.642		.497						
Tax	.593		.564						
ICT	.590								
Covid19	.588				-.496		.445		
comptn	.479	-.443						.418	
AI	.494	.712							
Autom	.511	.701							
crbn	.503	.510							
packing	.483		-.619						
Debt	.503		.551	-.467					
RecTrng	.411			.588			.481		
Skilled				.486	.464				.449
Otdeliv	.614					.721			
Csretn						.430			.555

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Lbrcost	.885								
LbrL	.871								
Traffic	.840								
Esential	.585		.500						
Threat	.527								
Tax		.920							
Debt		.891							
Profit		.736							
FleetM		.703					.544		
Linehaul		.698		.414			.453		
crbn			.879						
packing			.871						
Density			.751						
Volume	.539		.582						
WLB	.534		.568						
Jobrcg			.512	.512					
AI				.928					
Autom				.925					
ICT				.581		.452		.413	
COD					.738				
RecTrng					.714		.457		
RidersM	.409				.705				
Otdeliv					.651	.435			
comptn						.883			
Covid19	.412						.748		
Skilled								.865	
Csretn									.958

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 23 iterations.

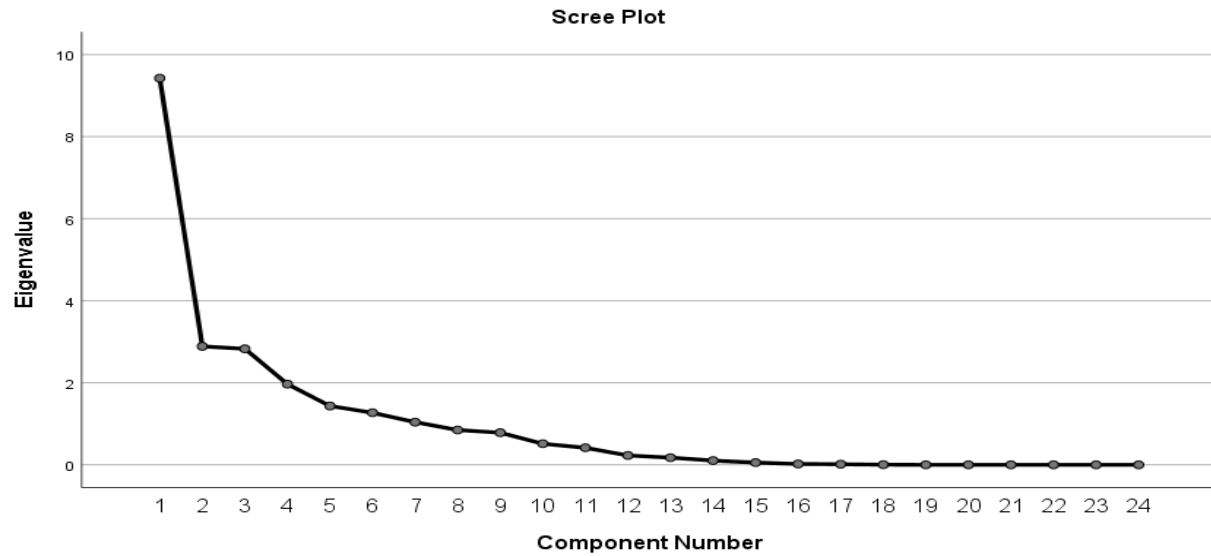
Exploratory Factor Analysis: Model 4

After removing the variable Rider management-0.836, external threat-0.849 and covid-19- 0.851

Communalities

	Initial	Extraction
comptn	1.000	.944
Lbrcost	1.000	.982
Linehaul	1.000	.954
COD	1.000	.930
Profit	1.000	.961
Debt	1.000	.869
Otdeliv	1.000	.971
FleetM	1.000	.941
Density	1.000	.961
Volume	1.000	.959
Skilled	1.000	.933
RecTrng	1.000	.982
ICT	1.000	.911
Autom	1.000	.956
AI	1.000	.960
LbrL	1.000	.969
Jobrcg	1.000	.891
WLB	1.000	.929
crbn	1.000	.906
Csretn	1.000	.961
Tax	1.000	.911
Esential	1.000	.888
Traffic	1.000	.946
packing	1.000	.863

Extraction Method: Principal
Component Analysis.



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.877								
Volume	.853								
Jobrcg	.812								
COD	.725			.487					
Density	.716								
Profit	.712		-.443						
Lbrcost	.701		-.470						
Esential	.690								
Linehaul	.690	.495							
LbrL	.663				-.422				
Traffic	.652		-.474						
FleetM	.631	.552							
Tax	.611	.597							
ICT	.599			.417					
crbn	.542		.526			-.433			
comptn	.479		-.441				-.429		
Debt	.500	.593							
packing	.514	-.553							
AI	.523		.648						
Autom	.540		.639						
Skilled				.610				.452	
RecTrng				.609			.526		
Otdeliv	.604				.706				
Csretn						.546		.499	

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Tax	.880								
Debt	.875								
FleetM	.826								
Linehaul	.800			.419					
Profit	.639							.574	
packing		.881							
crbn		.859							
Density		.750							
Volume		.625	.472						
WLB		.584	.474					.427	
Esential		.566	.536						
LbrL			.911						
Lbrcost			.904						
Traffic			.847						
AI				.930					
Autom				.927					
ICT				.588	.501				
Jobrcg		.504		.543					
comptn					.883				
RecTrng						.908			
Otdeliv					.442	.492		.467	
Skilled							.897		
COD								.560	
Csretn									.956

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Exploratory Factor Analysis: Model 5

After removing the variable Packing-0.863, Debt collecting-0.869 and Job recognition- 0.891

Communalities

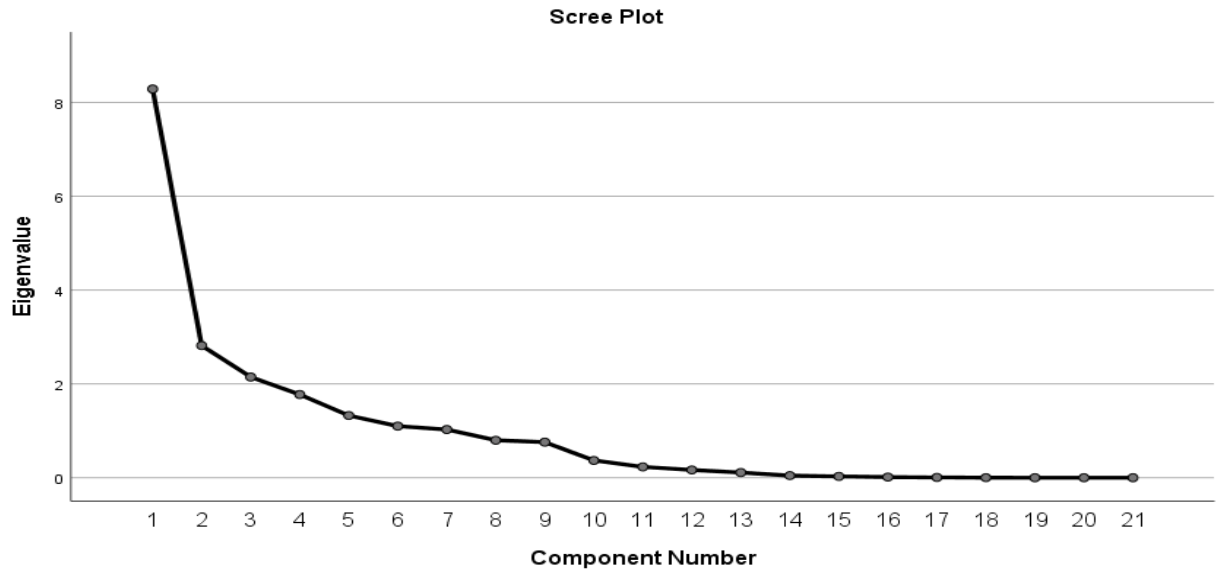
	Initial	Extraction
comptn	1.000	.964
Lbrcost	1.000	.982
Linehaul	1.000	.982
COD	1.000	.961
Profit	1.000	.965
Otdeliv	1.000	.972
FleetM	1.000	.975
Density	1.000	.925
Volume	1.000	.966
Skilled	1.000	.955
RecTrn g	1.000	.988
ICT	1.000	.942
Autom	1.000	.980
AI	1.000	.981
LbrL	1.000	.957
WLB	1.000	.941
Crbn	1.000	.955
Csretn	1.000	.966
Tax	1.000	.876
Esential	1.000	.859
Traffic	1.000	.938

Extraction Method: Principal
Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.286	39.458	39.458	8.286	39.458	39.458	3.685	17.550	17.550
2	2.816	13.412	52.870	2.816	13.412	52.870	2.655	12.644	30.194
3	2.146	10.220	63.089	2.146	10.220	63.089	2.642	12.581	42.775
4	1.773	8.444	71.533	1.773	8.444	71.533	2.593	12.349	55.124
5	1.326	6.314	77.848	1.326	6.314	77.848	2.350	11.191	66.315
6	1.100	5.237	83.085	1.100	5.237	83.085	1.690	8.048	74.363
7	1.027	4.890	87.975	1.027	4.890	87.975	1.621	7.718	82.081
8	.798	3.801	91.776	.798	3.801	91.776	1.406	6.693	88.774
9	.758	3.609	95.385	.758	3.609	95.385	1.388	6.611	95.385
10	.368	1.754	97.139						
11	.231	1.098	98.237						
12	.166	.789	99.026						
13	.110	.525	99.551						
14	.045	.213	99.764						
15	.028	.135	99.899						
16	.013	.062	99.960						
17	.006	.030	99.990						
18	.002	.010	100.000						
19	2.937E-16	1.399E-15	100.000						
20	-2.062E-17	-9.820E-17	100.000						
21	-9.002E-16	-4.287E-15	100.000						

Extraction Method: Principal Component Analysis.



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.870								
Volume	.846								
COD	.743		-.436						
Lbrcost	.724	-.535							
Profit	.723		-.429						
Linehaul	.692	.447		-.445					
Density	.689		.523						
LbrL	.681								
Esential	.679		.423						
Traffic	.673	-.586							
FleetM	.643			-.438					
Tax	.627		-.439	-.448					
ICT	.602			.507			.407		
AI	.509	.729							
Autom	.526	.715							
comptn	.487	-.511					.433	-.442	
RecTrng				.552			-.482		
Skilled			-.460	.517				.469	
Otdeliv	.606				.670				
Csretn			.457		.504			.490	
crbn	.504		.442			-.515			

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Lbrcost	.902								
LbrL	.897								
Traffic	.876								
Esential	.571	.536							
crbn		.913							
Density		.684							.435
WLB	.465	.630			.474				
Volume	.490	.608							
FleetM			.921						
Linehaul			.881						
Tax			.641		.586				
Autom				.929					
AI				.928					
Profit					.810				
COD					.642	.463			
Otdeliv					.568	.495			
RecTrng						.920			
comptn							.879		
ICT				.536			.594		
Skilled								.893	
Csretn									.970

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Exploratory Factor Analysis: Model 6

After removing the variable essential-0.859 and tax-0.876

Communalities

	Initial	Extraction
comptn	1.000	.971
Lbrcost	1.000	.984
Linehaul	1.000	.991
COD	1.000	.976
Profit	1.000	.968
Otdeliv	1.000	.973
FleetM	1.000	.992
Density	1.000	.928
Volume	1.000	.991
Skilled	1.000	.981
RecTrng	1.000	.994
ICT	1.000	.936
Autom	1.000	.978
AI	1.000	.979
LbrL	1.000	.958
WLB	1.000	.962
crbn	1.000	.961
Csretn	1.000	.977
Traffic	1.000	.947

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test^a

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.577
Bartlett's Test of Sphericity	Approx. Chi-Square	1301.475
	df	190
	Sig.	.000

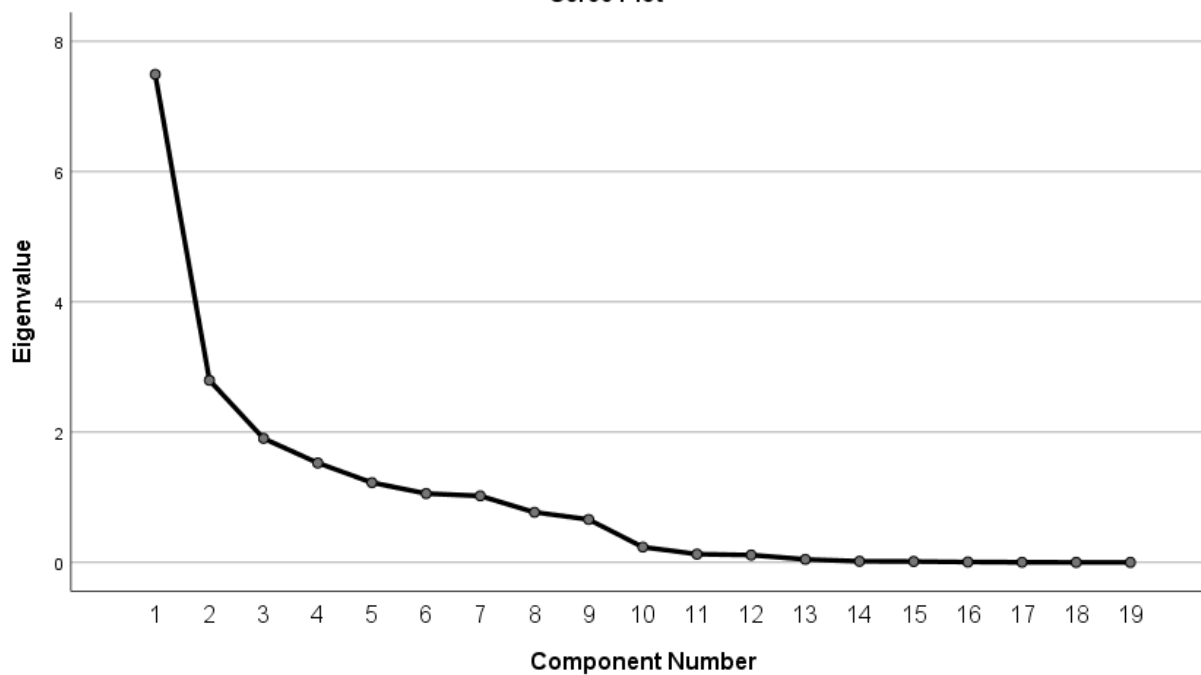
a. Based on correlations

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.492	39.433	39.433	7.492	39.433	39.433	3.455	18.183	18.183
2	2.795	14.710	54.143	2.795	14.710	54.143	2.588	13.620	31.803
3	1.903	10.016	64.159	1.903	10.016	64.159	2.330	12.262	44.064
4	1.526	8.032	72.191	1.526	8.032	72.191	2.218	11.675	55.739
5	1.224	6.444	78.634	1.224	6.444	78.634	2.105	11.081	66.820
6	1.057	5.561	84.196	1.057	5.561	84.196	1.543	8.119	74.939
7	1.020	5.370	89.566	1.020	5.370	89.566	1.503	7.909	82.848
8	.769	4.047	93.613	.769	4.047	93.613	1.380	7.265	90.113
9	.659	3.466	97.079	.659	3.466	97.079	1.324	6.966	97.079
10	.234	1.234	98.313						
11	.126	.666	98.978						
12	.112	.589	99.567						
13	.045	.239	99.806						
14	.017	.088	99.895						
15	.013	.070	99.965						
16	.005	.025	99.990						
17	.002	.010	100.000						
18	9.946E-17	5.235E-16	100.000						
19	-6.658E-16	-3.504E-15	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
WLB	.868								
Volume	.838								
COD	.765		.465						
Lbrcost	.714	-.532							
Profit	.703			-.416					
Density	.698		-.562						
LbrL	.686								
Linehaul	.675	.422		-.507					
Traffic	.657	-.573							
ICT	.631						.471		
Otdeliv	.630			-.434	.525				
FleetM	.627			-.589					
crbn	.503					-.425			
AI	.519	.734							
Autom	.536	.720							
comptn	.500	-.529					.402	-.493	
Skilled			.696						
RecTrng	.408		.538		.417		-.409		
Csretn			-.533			.507			

Extraction Method: Principal Component Analysis.

a. 9 components extracted.

Rotated Component Matrix^a

	Component								
	1	2	3	4	5	6	7	8	9
Lbrcost	.919								
LbrL	.908								
Traffic	.876								
Autom		.931							
AI		.929							
crbn			.915						
Density			.686						.435
WLB	.498		.629		.434				
Volume	.508		.591						
FleetM				.930					
Linehaul				.888					
Profit					.799				
COD					.684	.404			
Otdeliv					.675	.407			
RecTrng						.927			
comptn							.861		
ICT		.527					.630		
Skilled								.920	
Csretn									.976

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Case Processing Summary

		N	%
Cases	Valid	48	100.0
	Excluded ^a	0	.0
	Total	48	100.0

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

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.906	.907	19

Item Statistics

	Mean	Std. Deviation	N
Comptn	2.8750	1.37802	48
Lbrcost	2.5000	1.12987	48
Linehaul	2.2500	.83793	48
COD	3.2500	1.49467	48
Profit	2.7500	1.31278	48
Otdeliv	2.9583	1.47256	48
FleetM	2.2083	.87418	48

Density	2.7083	1.35204	48
Volume	3.0000	1.42918	48
Labour	3.1250	1.46774	48
Skilled	2.7500	1.31278	48
RecTrng	2.4583	1.16616	48
ICT	3.4167	1.62210	48
Autom	2.5833	1.26883	48
Traffic	2.6250	1.23124	48
LbrL	2.5833	1.26883	48
WLB	2.8750	1.37802	48
Csretn	2.8750	1.37802	48
Crbn	2.3750	1.00266	48

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.746	2.208	3.417	1.208	1.547	.105	19

Inter-Item Correlations	.339	-.308	.973	1.281	-3.162	.048	19
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Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Comptn	49.2917	204.977	.479	.	.903
Lbrcost	49.6667	203.206	.661	.	.898
Linehaul	49.9167	211.482	.557	.	.902
COD	48.9167	192.418	.750	.	.895
Profit	49.4167	199.652	.657	.	.898
Otdeliv	49.2083	198.211	.612	.	.899
FleetM	49.9583	211.871	.516	.	.902
Density	49.4583	200.764	.605	.	.899
Volume	49.1667	191.631	.811	.	.893
Labour	49.0417	201.743	.524	.	.902
Skilled	49.4167	210.121	.366	.	.906

RecTrng	49.7083	211.275	.387	.	.905
ICT	48.7500	196.277	.591	.	.900
Autom	49.5833	209.610	.396	.	.905
Traffic	49.5417	202.466	.621	.	.899
LbrL	49.5833	201.184	.638	.	.899
WLB	49.2917	192.466	.821	.	.893
Csretn	49.2917	218.254	.138	.	.913
Crbn	49.7917	212.339	.425	.	.904

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
52.1667	225.759	15.02527	19