'Investigating the Effect of Supply Chain Process on Corporate Performance of the Automotive Market-Egypt': Does USD unavailability matters?

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Abstract

This study investigates the effect of supply chain processes on corporate performance in Egypt's automotive industry, focusing on the moderating effect of USD availability. It aims to understand how supply chain dimensions—such as Just-In-Time Production (JITP), Total Quality Management (TQM), influence key performance metrics like sales growth, efficiency management of automotive industry. The research utilized a quantitative design investigation techniques. A quantitative survey data and structural equation modelling analysis was employed to study relationships between different variables. Extensive analysis shows that sound supply chain strategies create major boosts in corporate performance that USD shortages temper by causing performance issues and expense increases while affecting operational procedures JITP and TQM for increasing product sales and efficiency management. The research outcomes show practitioners should expand their supplier networks and establish domestic production facilities

while building information technology platforms to reduce currency-related operational risks. Government officials need to establish equal USD availability and drive domestic industries toward expansion and invest in technology tools that boost supply chain speed and market competitiveness. The present research advances supply chain performance research through the investigation of USD availability as an influence factor. Research combining quantitative provides comprehensive knowledge about supply chain operations in emerging markets and generates practical guidelines for navigating financial uncertainties.

Keywords: Supply Chain Management, USD, Corporate Performance, Automotive Industry, Egypt, Just-In-Time Production, Total Quality Management, Innovation Competence, Operational Efficiency

1. Introduction

In today's globalised economy, the management of supply chains has become one of the key differentiating factors that defines the level of success that a firm realizes across multiple industries anywhere in the world. With an up surp of bid interconnectivity and market competition, enterprises are gradually realizing that the rational management of the activities contained in the supply chain has a significant interaction with organizational outcomes and corporate profitability. Just like many industries, automotive industry, in specific terms of designing, manufacturing and delivering vehicles to customers with optimal organizational

structure, contacts immensely hinges on several chains of supply network (Koberg and Longoni, 2019).

Some of the common processes that come under the umbrella of supply chain are rampantly widespread activities necessary for manufacturing automobiles. Such activities include just in time manufacturing, total quality management, network collaboration, supply chain management, IT integration and CRM. If executed properly, these activities may lead to better operations, lower costs, higher product quality and greater market responsiveness. In light of this, numerous automobile businesses are making significant investments in the enhancement of their supply chain capabilities in order to obtain a competitive advantage (Salminen and Ulfbeck, 2019).

In the automobile sector, the success of corporations is often evaluated using a variety of measures, including but not limited to sales growth, operational efficiency, innovation competency, and reputational assets. A supply chain that is efficiently managed can have a beneficial impact on these metrics by facilitating a faster time-to-market for new models, ensuring that product quality is consistent, facilitating a smoother collaboration with suppliers and partners, and ultimately boosting customer happiness and perception of the brand (Khannan et al. 2021; Mota et al. 2021).

The study of how the flow of activities under the supply chain influences the performance of companies in the automobile

industry in Egypt gives a unique case analysis that may be utilised for such a purpose. Egypt automobile industry, the largest in the Middle East and North Africa region face its own difficulties and opportunities that are shaped by the prevailing structure in the Egyptian economy, political and legal system as well as consumers.
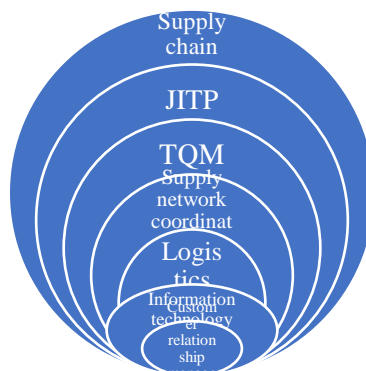
2. Literature review

2.1 Supply Chain Process

Figure 1. Supply Chain Process

Source: Developed by the author

2.1.1 Just-In-Time Production (JITP)

JITP stands for Just in Time Production, which is a crucial part of the supply chain management and favored as a lean manufacturing technique. The primary objective of JITP is thus

to eliminate all kinds of waste activities namely, over production, waiting, conveyance or transportation, processing, inventory, motion and defects also referred in lean manufacturing concepts as the 'seven wasted types' (García-Alcaraz and Maldonado-Macías, 2016).

Therefore, the application of JITP calls for radical transformation of the conventional production systems. That why SCM demands an extremely well-coordinated system of supply, where suppliers, producers and distributors link good and services. This synchronisation is not just limited to time but Quality, Inventory, and even aspects of product design. In JITP system every element of manufacture cycle is timed perfectly to ensure that at any step in manufacture process the components or parts required arrive exactly at the right time and not earlier than needed, or later than required by the next step in the production line (Ramezani and Razmeh, 2014).

A few others are Information flow which is another important element of JITP. Again, there is a need to provide timely information on production status, inventory status and changes in demand signals across the chain. This more often than not requires sophisticated information systems and technologies such as Enterprise Resource Planning (ERP) systems, electronic data interchange (EDI) and the fairly recent, internet of things (IoT) devices for real-time tracking/monitoring (Kaswan et al. 2019).

2.1.2 Total Quality Management (TQM)

Based on historical literature, TQM has its origins in early quality management thinkers including, W. Edwards Deming, Joseph Juran and Kaoru Ishikawa in mid 1900's. Originally invented and practiced in the postwar Japan, TQM has been instrumental in Japans business revival and is now practiced in businesses all around the globe and across industries (Moghadam et al. 2021).

TQM extends the customer concept into the organization, which is the focal point where customer requirements are met or exceeded. This approach calls for extensive analysis of customer requirements now and in future so that all organizational systems can be geared towards achieving high value to customers. Through customer satisfaction, TQM directs organizations to continuously collect and to evaluate customer feedback to ascertain that service deliveries and products meet the changing market needs. Furthermore, it increases customer orientation, which becomes a core value across the company (Sheikholeslam and Emamian, 2016). TQM is based on the systematic model of the organization where the implementation of different processes is stressed on the idea of their gradual enhancement to make efficiency rates and effectiveness higher. Several procedures are involved in this framework, and they include the process mapping, mapping of bottlenecks, and putting forward the improvements. This systematic method makes all the employed

parts of the organization as coherent with most of them recognizing the role each process plays in attaining the laid down objective (Kumar and Sharma, 2018).

2.1.3 Supply Network Coordination

Supply Network Coordination is one of the subdivisions in the current supply chain that does not only address the coordination of different activities but also information and resources from supply network members. It is a different way of perceiving supply chain, that is wider than a linear view that connects buyers with suppliers, manufacturers, distributors and other stakeholders (Kim et al. 2015).

This paper identifies information sharing, as one of the basic tenets, that form the bedrock for coordinating a supply network. This includes the number of stock requisite in a particular period and other dynamical data such as demand forecasts, inventory, production time table and transport status. Information exchange to both relevant and timely also plays a vital role towards in minimizing the bullwhip effect which is the amplification of the demand variability as we proceed to the next distribution channel (Biçer and Seifert, 2017).

The real-time exchange of data in the network is achieved by Enterprise Resource Planning (ERP) systems, Electronic Data Interchange (EDI) and use of cloud based systems. In more recent years, new applications of technology such as the blockchain technology have been discovered for use in the

creation of an unalterable record of the transactions and information flow in the supply network. Supply Network Coordination emphasizes joint planning and forecasting activities among network partners. This approach is most commonly known as Collaborative Planning, Forecasting and Replenishment and helps companies achieve improved accuracy of demand signals and related supply (Chopra et al. 2022).

This is because when planning is done in involvement of various stakeholders the result will be more competent and feasible one therefore the recommended approach is involvement of the multiple stakeholders. It can include new product design and development cross functional teams where timely supplier input and integration can occur and new products are develop with manufacturability and supply chain considerations in mind (Gramberger et al. 2015).

2.1.4 Logistics Management

Logistics is a sub-process of the supply chain management and is directed to organizing and managing the flow and storage of goods, services and any pertinent information from the point of production to the point of consumption. It refers to all the activities by which the right stock of products is transported to the right place, at the right time and in the right quantity and quality. Logistics has grown from being a functional activity to one that possesses the potential of delivering competitive advantage. Today, logistics management has becoming one of the

most important business activities cutting across industries with respect to its contribution to customer satisfaction, reduction of cost, and satisfaction of stake holders (Hou et al. 2017).

logistics is about the design, management, and control of the flow of goods. It encompasses mode choice (road, rail, air, sea), carrier choice, route and time determination. Transportation management has evolved into a complicated process as a result of the globalization of supply chain operations through the application of sophisticated instruments and techniques for the management of international transports, customs formalities, and the systems of the multi-modal transports. Solutions that have been developed include the efficient management of transportation by use of technology like the TMS. These systems can give a real-time view into shipments, for instance, select the carrier with the cheapest rates meeting service level agreements, and route the shipment to guarantee the least transportation costs and shortest delivery cycles (Van Heeswijk et al. 2019).

This area of logistics concerns transportation of freight within the warehouse and distribution centers. Proper management of a warehouse is always important in terms of controlling holding cost of inventories, time taken to fulfil orders, and accuracy of orders picked. Current warehouse systems include Warehouse Management Systems (WMS), Automated Storage and Retrieval Systems (AS/RS), and Robotics in orer to optimise efficiency and productivity. Location of these distribution centers is also

important factors that affects the entire logistics network and the design. There is always pressure on organisations to have products in stock but equally there is pressure to avoid inventory holding cost (Vieira et al. 2015).

2.1.5 Information Technology

IT systems play a crucial role in supply chain processes as the supply chain's fundamental structure as the internal and external information system enabler. Since its initial application in the SCM context, the importance of IT has not been limited to the supply of basic task-supportive services but progressed towards becoming an influential, decision-supporting service in innovative processes. ERP systems are the digital heart and soul of many companies providing an efficient interface for different business applications such as supply chain management, finance, human resources, and customer relationship management. In facilitating the supply chain, ERP systems act as a single source of maintaining procurement activities, inventory control, production, and distribution (Panahifar et al. 2018).

The efficient supply chain management is implemented in most contemporary ERP systems, which have the element of cooperation with analytics engines to supply actual-time data. They also foster improved communication between different sections of the organization and the outside world, thus leading to better organisational supply chain co-ordination. Supply Chain While ERP systems incorporate general business process

integration, dedicated SCM software is about particular supply chain processes. These may include demand plan, supply plan, transportation plan, warehouse plan and suppliers' plan. SCM software in the more complex organizations involves artificial intelligence and machine learning capabilities aimed at improving the forecasts, the inventory point position and, in particular, recognizing and preventing a potential disruption. Another key advantage inherent in cloud-based SCM solutions is the relative ease of scaling the application to the needs of the particular business and the availability of access to the system and the ability to work together within the supply chain network (Mostafa, 2020).

2.1.6 Customer Relationship Management (CRM)

CRM is the element of the supply chain management process that directs attention to how an organization can manage and enhance its communication with a customer. What used to be a mere sales and marketing tool especially for measuring consumers satisfaction has over time merged with supply chain and known dully well that supply chain cannot prosper without consumers. While in SCM, CRM is a little broader because it encompasses far more than managing the relationships where customers interact with the business; it also incorporates the ways in which supply chain operations can effectively meet customer needs to improve performance, satisfaction and retention. In its core,

CRM is about amassing, consolidating and, analyzing customer data (Alshurideh et al. 2019).

This encompasses name, address, phone number, email, shopping history, preferences and behaviors from one or multiple contact points. Specifically in supply chain context this data is essential for demand forecasting, product and service personalization, and inventory management. Some of the sophisticated features of the modern CRM systems allow bringing the data from different sources such as sales, customer service, social media etc to provide the single record of each customer. It makes it easier to provide more customer-specific tailored service and in return provides a better understanding of the demand (Grewal et al. 2019).

CRM data plays a crucial role in demand forecasting, which is a critical input for supply chain planning. By identifying what has been purchased in the past and more importantly consumer preferences with other key market factors, organizations are often in a better position to forecast future demand rates. At the same time, it is possible to solve various problems with the help of machine learning algorithms using the obtained data of CRM, and obtain more accurate data on the further behavior of consumers. These improvements include inventory control, production planning and scheduling, and resources availability planning in the logistic chain (Rezaei et al. 2020).
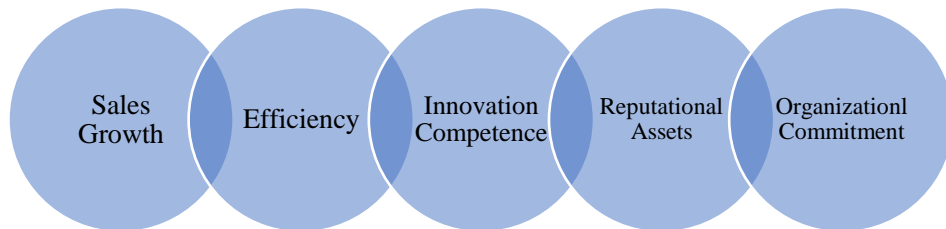
2.2 Corporate performance

Figure 2. Corporate performance dimensions
Source: Developed by the author

2.2.1 Sales Growth

Sales growth is a critical measure of corporate performance, reflecting a company's financial health, market position, and overall business success. It represents the increase in sales revenue over a specific period, typically compared on a year-over-year or quarter-over-quarter basis. More than just a number on a financial statement, sales growth is a multifaceted concept that indicates a company's capacity to expand its market share, enter new markets, innovate its products or services, and effectively respond to evolving customer needs and market dynamics. The significance of sales growth in corporate performance cannot be overstated. Investors, analysts, and stakeholders often prioritize this metric when evaluating a company's performance and potential (Kliestik et al. 2020).

Sales growth is not a simple, one-dimensional metric. It can be achieved through various strategies and manifest in different forms, each with distinct implications for overall corporate performance.

Key aspects of sales growth include the distinction between organic and inorganic growth, where organic growth stems from a company's existing operations and is often viewed more favorably, while inorganic growth involves mergers and acquisitions, which may bring integration challenges. Sales growth can also be driven by volume or price increases, each reflecting different business strategies (Gimmon and Levie, 2021).

2.2.2 Efficiency Management

Optimality is a key idea in organizational effectiveness referring to organizations' capacity to generate the highest possible outcome with the least possible resources. It refers to accomplishing the most for the least in terms of input experienced by organizations, which affects organizational profitability, competitiveness, and longevity. At the heart of efficiency, one finds the stated goals of achieving the greatest value for what is available or attainable through available resources. More with less, waste reduction, lower costs, and increased customer and shareholder value are important goals both for efficiency which is a business imperative today in the global world (Shin and Konrad, 2017).

When it comes to corporate efficiency one function that can be distinguished is operational efficiency which relates to the optimization of business processes. It entails rearrangement of activities, cutting the cycle time, and excluding waste in the production line or in the process of providing a particular service.

High operational efficiency is one of the most substantive parameters in the field of production and supply, as organizations that meet it can offer products or services faster, with less mistake, and at a cheaper cost. Map of various strategies used for improving process efficiency The forms of processes that are usually used in optimization are; Lean management, six sigma, business process reengineering (BPR), and automation (Dumas et al. 2018).

2.2.3 Innovation Competence

Innovation competence as the firm's capability to routinely come up with new, superior, and valuable ideas, goods, services or techniques that are beneficial to the firm as well as other stakeholders. This capability has become a necessity in today's faster and complex business environment in order to build a sustainable competitive advantage (Hero et al. 2017).

The significance of innovation competence in enhancing corporate performance cannot be overstated. Organizations with strong innovation abilities are more adept at developing new products and services that fulfill unmet market needs, improving existing offerings to increase customer satisfaction, and creating more efficient and cost-effective processes. Furthermore, innovation competence enables businesses to enter new markets, build strong brand reputations, and achieve higher profit margins through unique, value-added offerings (Zhang et al. 2019).

Companies with these capabilities can also attract and retain top talent, who are often drawn to innovative environments.

Innovation can take various forms. While product innovation is frequently highlighted, companies can also innovate in areas such as process innovation—developing new methods for production or delivery; business model innovation—reshaping how value is created, delivered, and captured; marketing innovation—introducing new ways to promote and sell products; and organizational innovation—implementing new practices within the business or workplace (Boštjančič and Slana, 2018).

2.2.4 Reputational Assets

Reputational assets are any work in progress but important characteristics which a firm has that relates to its external appearance, believability, and perception by society. These assets consist of the worth that is attached to the organisation by consumers, employees, shareholders, government amongst other persons in the society. Reputational assets play a strategic function in the modern globalized environment, in which news, or, in fact, information, travels fast. Having a sound reputation tends to increase the flow of customers, make employees happy to join a company, investors willing to invest their money, and regulators or partners willing to collaborate with the business. On the other hand, reputation loss brings severe negative outcomes including reduced sales, morale, escalated regulatory attention, up to risk of insolvency (Baruah and Panda, 2020).

Several components which form are integral to building reputational assets. It is also common for companies to place

heavy importance on brand identity since it is people's perception of the company can be relied on to influence its turnover, enable increased prices for its products, and provide the basis on which it can enter new markets. Equally important is the reputation of a company's products or services. Consistently delivering high-quality and reliable products builds trust with customers and leads to long-term loyalty. Customer satisfaction and loyalty are essential, as how a company treats its customers can lead to positive word-of-mouth recommendations, fostering a strong and favorable reputation (Dacko-Pikiewicz, 2022).

2.2.5 Organizational Commitment

Committed employees tend to show greater innovation, stronger organizational citizenship behaviors, and help cultivate a positive company culture, contributing to better team cohesion and an attractive employer brand. On the contrary, low commitment can lead to higher absenteeism, decreased productivity, and a toxic work environment (Afshari et al. 2020). Employees with high affective commitment are deeply invested in the company's goals and take pride in their membership. Continuance commitment is based on the perceived cost of leaving the organization. Employees with strong continuance commitment feel they need to stay due to the potential losses associated with leaving, such as missed opportunities or non-transferable skills (Chordiya et al. 2017).

Normative commitment, on the other hand, stems from a sense of obligation, where employees remain because they feel they ought

to, often influenced by loyalty or cultural expectations. Professional commitment, increasingly recognized in knowledge-based industries, is employees' dedication to their profession or field, often balancing professional standards with organizational loyalty (Aranki et al. 2019). Various factors influence organizational commitment. Leadership and management practices play a pivotal role, with transformational leadership styles, clear communication, and recognition of employee contributions being particularly impactful. Organizational culture, which fosters alignment of personal and organizational values, also significantly affects commitment. Job characteristics, such as autonomy, meaningful work, and opportunities for growth, alongside fair compensation, career development, and work-life balance, all contribute to how committed employees feel (Aruldoss et al. 2022).

2.2.6 USD unavailability

Probably the most critical problem within supply chains is the lack of access to US Dollars (USD) – this, in turn, can have severe impacts on worldwide trade and economic sustainability. This is a common issue that arises when such business mostly operating in the developing or emergent economies lack adequate USD needed in the international operations. The World's leading reserve currency the USD is instrumental for a considerable part of global business, with key importance in the import and export of oil and in global value chains (Melvin and Norrbin, 2017).

Several factors play a role to do with USD unavailability. Trade imbalance that is prevalent in most countries with negative balance of trade impacts on USD as the country used import more than export hence a net export of dollars. Some governments use currency controls – limiting exchange or briefly holding possession of foreign currencies including USD in order to support their own currency or overcome some economical difficulties (Al-Harbi, 2019).

New global banking rules aimed at preventing money-laundering and funding for terrorism have been known to cause challenges to companies in some nations to obtain USD. Sanctions reduce or prevent a country from engaging in certain transactions such as using USD in transacting international businesses whether with local or global firms. In periods when economic risk rises people prefer to hold USD; therefore, during those periods there might be shortages of USD in some regions. Furthermore, the market USD liquidity can be determined by other factors such as the US Federal Reserve mortgage policies, in terms of interest rate change or quantitative easing facilitate (Gaviyau and Sibindi, 2023).

2.3.1 USD unavailability and Egypt currency fluctuation

In this case, questions of unavailability of USD and fluctuations in Egyptian currency Bears close relationship and poses many problems to the Egyptian economy and more so to its external commitments as a player in the market. This paper focuses on the Egyptian experience, and like most developing countries, Egypt has from time-to-time undergone short dollar spells partly as a result of a volatile EGP. Environmental depletion, business and consumer perspectives, and overall economic impact of this condition have been tremendous. As has been discussed earlier, there are several reasons for such a problem with USD availability in Egypt. The country has always had a trade deficit; it exports less than what it imports, and an outcome of that is that dollars are sent out. This was made worse by political instabilities that came as a result of the 2011 revolution hence reducing heavily on tourism and foreign direct investment important sources of foreign currency to Egypt. COVID-19 escalated these challenges because the restrictions in international travel affected tourism income (Ghaly et al. 2024; Springborg, 2017).

2.4 The relationship between Supply Chain Process and Corporate Performance

The relationship between Supply Chain Process and Corporate Performance is complex, multifaceted, and increasingly critical in today's globalized business environment. This relationship is

characterized by a strong interdependence, where improvements in supply chain processes can significantly enhance various aspects of corporate performance, and conversely, strong corporate performance can enable further investments and advancements in supply chain capabilities (Gunasekaran et al. 2017).

At its core, an effective supply chain process contributes to corporate performance by enabling the efficient flow of goods, information, and finances from suppliers to end customers. This efficiency translates into multiple performance benefits for the corporation, including cost reduction, improved quality, enhanced customer satisfaction, and ultimately, increased profitability and market share. One of the primary ways in which supply chain processes impact corporate performance is through cost reduction. Efficient supply chain management can lead to lower inventory carrying costs, reduced transportation expenses, and minimized production costs through just-in-time manufacturing practices. These cost savings directly contribute to improved profit margins and overall financial performance (Prajogo et al. 2016).

2.5 USD unavailability and Supply Chain Process

The absence of supply US Dollars can greatly impact on supply chain systems most likely in the systems involved in the international supply chain systems. Being that the USD was the world's reserve currency, it is used to clear international transactions, value most goods, and as a benchmark unit of

account in global trade. When USD is out of the market or in short supply it can cause major upheavals in different areas of the supply chain management process. Procurement and sourcing are one of the most areas that can be affected in the short term. Most of the international suppliers give quotations in USD and expect their payment to be made in the same currency. The following are the direct impacts of forex risks on operations; If a firm is having hard time to access the USD, there are high chances that it will fail to meet it suppliers obligation on time hence exposing it to supply disruption, strained relations with the suppliers or renegotiation on payment terms (Osgood, 2018).

It was also found that constraints on USD may be hampering inventory control strategies. Currency problems may have pulled down the notion that firms must stock up enormous inventory as a hedge against supply challenges. Such increased inventory holding can occupy more of the working capital and may also may raise the carrying cost of inventory in the supply chain. Even the supply chain transport and logistics are not immune to the effects of unavailable USD. A significant amount of the global contracts for international shipping and fuel are quoted in USD. That is why problems with the purchase of the given currency may result in the inability to cover the cost of transportation of services that can leads to disruptions in the timely delivery of goods and their subsequent transportation along the supply chain (Anyona, 2019).

2.6 Automotive market Industry

The automotive market industry is a vast, complex, and rapidly evolving sector that plays a significant role in the global economy. This industry encompasses the design, development, manufacturing, marketing, and sale of motor vehicles, and includes a wide range of companies from vehicle manufacturers to parts suppliers and dealerships. One of the defining characteristics of the automotive industry is its global nature. Major automotive companies operate on a worldwide scale, with complex supply chains that span multiple countries and continents. This global reach allows companies to access diverse markets, leverage regional cost advantages, and spread risk across different economic environments (Miglani, 2019).

In recent years, the automotive industry has been undergoing a period of significant transformation, driven by several key trends. One of the most prominent is the shift towards electric vehicles (EVs). Concerns about climate change and stringent emissions regulations in many countries have accelerated the development and adoption of EVs. This transition is not only changing the nature of the vehicles produced but also reshaping supply chains, as the components and materials needed for EVs differ significantly from those used in traditional internal combustion engine vehicles.

2.7 USD Unavailability and research gap

As much as the availability of USD and its shortage is known to have various macroeconomic impacts, there is surprisingly scant empirical research on how those shortages transmission down to specific supply chain practices and or characteristic corporate performance. While most of the existing literature investigates macro-level consequences of external pressure, little attention has been paid to the analysis of the firm level operational adjustments and negative performance change.

The effect of shortages of USD on inventory management practices is a fairly neglected research subject. When firms work under the domination of USD constraints it is became tone optimal inventory policy which would focus on the risks than the efficiency. Another weakness is that the traditional JIT systems are mainly affected, because firms need to hold more buffer stocks to mitigate the risks resulting from the lack of availability of currencies with which to pay suppliers. This change from lean thinking to precautionary accumulation comes not only added holding costs and the complication of warehouse management but basically redraws the cost model of supply chain.
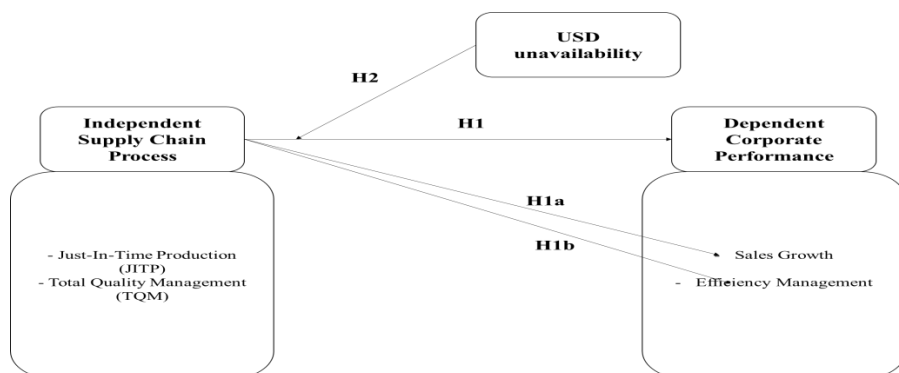
Figure 3. Conceptual Framework
Source: Developed by the author

H1: Supply chain process has a positive significant effect on Corporate Performance

H1a: Supply chain process has a positive significant effect on Sales Growth

H1b: Supply chain process has a positive significant effect on Efficiency management

H2: USD unavailability moderates the relationship between Supply chain process and Corporate performance

H2a: USD unavailability moderates the relationship between Supply chain process and Sales Growth

H2b: USD unavailability moderates the relationship between Supply chain process and Efficiency management

3. Methodology

3.1 Data Source and Description

This dissertation establishes and uses primary as well as secondary data to enhance the possible quantitative assessment

on the influence of supply chain activities on corporate performance in the Egyptian automotive industry especially analysing of the moderating influence of USD unavailability. Therefore, in portraying both types of data, the study seeks to enhance the validity of hypothesis testing to give out a quantitative analysis.

3.2 Primary Data

The main data collection was questionnaire which was developed from literature review, Nguyen, de Leeuw and Dullaert (2018), Christopher (2016). The survey sampled responses from 399 employees across various departments in a leading automotive companies in Egypt, focusing on those directly involved in supply chain activities: Chopping, quality control, supply chain and retail, and purchase are other divisions of the company. These departments are key to analysis as they mostly feel the consequences of supply chain issues and currency, especially USD inaccessibility, on corporate outcomes. The high response rate was achieved through face-to-face interviews; however, 43 responses were excluded due to respondents' limited understanding of specific supply chain metrics, such as the order fulfillment rate. Some employees of the company particularly in the warehouse department were not equally enlightened on these processes.

The final dataset comprises:

• Quality Control: 216 employees

• Supply Chain: 134 employees

• Sales and Marketing: 46 employees

• Logistics: 2 employees

• Production: 1 employee

This is because the company's workforce structure is represented here, with the largest area being the production department, and the smallest being the customer service. The sample is also diverse with the employees' responses along with Middle management (224), Senior management (152), Supervisor (17), Executive level (4), Entry level (2) of the organizations so it also gives clear perception of the impact of supply chain processes on corporate performance from employees' and managers' view point.

The sample size of 43 employees (with 399 valid responses after exclusions) appears statistically substantial for analyzing a single automotive company in Egypt, particularly given the stratified nature of the sample across key departments (Quality Control: 216; Supply chain for 134 while Sales and Marketing was 46, Logistics was 2 and Production was 1. Having numerous hierarchical levels, including 46 supervisors and 18 managers, increases the generalisability of organisational views included in the sample. Using the face-to-face interview approach, I was able to secure a high response rate, and this also minimizes response bias at some point, but the 43 missing responses in this study because of the respondent's lack of understanding various supply

chain metrics indicate that there is limited practical knowledge of employees in different departments.

Nevertheless, the sampling frame has some uncovered drawbacks in terms of generalizing the heterogeneity of the broad Egyptian automotive sector. Although employing the AMIC-Egypt June 2024 report as a sampling frame and covering such brands as Toyota, Hyundai, Kia, BYD, and others, the research is dedicated to the findings of only one "Leading Automotive Company." This approach may act to reduce potential external validity of reported results, especially taking into considerations the highly diverse character of the automotive industry in Egypt, through horizontally differentiated multinationals, and local manufacturers and assemblers. A more rigorous study could have involved several firms, perhaps to provide a snapshot of the sector's diverse characters and how different types of organizations and sizes respond to USD unavailability hurdles.

3.3 Sampling Methods and sampling Frame

When conducting a study on the influence of supply chain processes on corporate performance in Egypt's automotive market especially the impact of USD unavailability, this research adopted cluster random sampling as its technique. Cluster random sampling targets a cluster from a sampling frame of diverse elements, which makes it possible to capture a range of information about the subject under study (Soma & Meeden, 2021). In this study, the sampling frame was obtained from the

AMIC-Egypt June 2024 report of the key active car companies in the market.

Selected from a pool of randomly selected organizations, the HEAD of the supply chain department, selected employees from the logistics department and selected employees from the quality assurance department were all interviewed in person. This method of direct interaction helped in achieving high response rates and reduced bias when giving an accurate picture of the problems impacting the supply chain processes especially due to USD constraints. The selected automotive company also supplemented the survey results with secondary data for improved analysis of employees' opinions and attitudes. Hence, data collected from these sources helped enrich understanding of the subject concerning the role of USD scarcity in moderating the influence of supply chain processes on the corporate performance in Egyptian automotive industry.

3.3.1 AMIC-Egypt June 2024 Report: Data Accuracy and Liability Clause

The absolute and relative measures of data accuracy in the AMIC report stem from the validity and precision that members of AMIC give when submitting these numbers under their own volition. Thus, neither the AMIC entity as an organisation and body, nor the contracted research firm, which aggregates and publishes the monthly reports, bears any responsibility for the accuracy of these numerical values. The June 2024 report also

features a break-up of the market based on important automobile brands operating in the Egyptian market these brands include Toyota Hyundai Kia BYD Geely Abou Ghaly Suzuki MG Renaults Golden Dragon and Mitsubishi.

3.4 Methods

In Chapter 3, Research Methodology, a quantitative data will be specifically planned and approach to achieve a profound analysis of Egyptian automotive market as well as identifying factors affecting business performance. In this research, quantitative questionnaires be employed in order to get a snapshot of the purely numerical aspects of the industry's CLM supply chain, currency influences, and operating strategies, but also the surrounding environment that cannot be expressed through numbers alone.

To a large extent, quantitative data that is mostly collected through structured surveys will provide statistical evidence of the nature of relationships between supply chain activities and corporate performance indicators. Questionnaires will be directed to some of the major car makers where information will specifically be sought based on day to day production schedules, stock available, and costs. Such data shall enable the fundamental comprehension of key macro factors influencing corporate performance and a quantitative estimation of drivers including availability of USDs and the amalgamation of JIT and TQM.

3.4.1 Quantitative approach

This study investigates the effects of supply chain processes on corporate performance within Egypt's automotive market, with a specific focus on whether USD unavailability acts as a moderating factor. To evaluate the effectiveness of supply chain processes in enhancing corporate performance, the research applies a quantitative approach, using a descriptive analysis framework. The primary objective is to analyze the degree to which supply chain processes impact corporate performance in Egypt's automotive market, considering the additional factor of currency   availability.

The research utilizes survey data collected from employees in the warehouse, logistics, and quality departments across various automotive companies. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) are employed to verify relationships and validate the model's reliability. CFA, as explained by Brown and Moore (2012), is foundational for SEM by identifying latent variables and assessing the reliability of key performance indicators (KPIs) used to measure these variables. This foundational layer in analysis informs SEM, which is applied to determine complex, causal relationships between variables as recommended by Brown, Hecker, and Bok (2021). SEM also leverages recent advancements in statistical software, which increase accessibility and analytical precision (Jöreskog, 1970; Bowen & Guo, 2011).

The SEM model has its own assumptions which are: multivariate normality, no outliers, large sample size, and correctly specified model. In SCM research, it is crucial to make assumptions, which would help accurately build paths between the variables and show the impact of USD unavailability on supply chain procedures and business outcomes. Ullman & Bentler (2012) opined that SEM is well applicable when using Likert-scaled variables and performance indicators. A second method called Partial Least Squares (PLS) is also used in this study because of its applicability to work with multiple variables alongside its predictive strength in SCM research (Vinzi et al., 2010; Hair et al., 2019). Interstingly, PLS is less demanding in terms of assumptions compared to SEM, which makes it more suitable for theory verification in emergent research domains (Memon et al., 2022). According to Purwanto & Sudargini (2021) PLS can perform well for both regression and principal component analysis, becomes more strong when using new sample data affecting the model parameter slightly. In fact, it is quite relevant in evaluating the aforementioned objectives more so cost, knowledge transfer, as well as operations competency to decipher the supply chain within the auto industry in Egypt. Thus, the selected methods allow evaluating the role of the supply chain in corporate performance in the perspective of USD accessibility. By means of these statistical tools and methods, the present research will attempt to identify the ways

for the improvement of the supply chain management processes and the analysis of the issues connected with currencies within the context of the automotive market of Egypt.

Table 1. Likert Scale of Questionnaire

No.	Dimension & Statement	
SUPPLY CHAIN PROCESS		
Just-In-Time Production (JITP)		Kaswan et al. (2019)
SC1	Our company consistently delivers products exactly when they are needed	
SC2	We maintain minimal inventory levels while meeting production requirements	
Total Quality Management (TQM)		Das et al. (2008)
SC3	Our organization implements comprehensive quality control procedures at every production stage	
SC4	Quality improvement is a continuous process in our manufacturing operations	
CORPORATE PERFORMANCE		
Sales Growth		Chandler et al. (2009)
CP1	Our company has experienced consistent sales growth over the past three years	
CP2	We have successfully expanded our market share in key segments	
Efficiency Management		Roy and Khastagir (2016)
CP3	Our production processes minimize waste and resource utilization	
CP4	We consistently meet or exceed our operational efficiency targets	
USD UNAVAILABILITY		Friberg and Wilander (2008)
USD1	The unavailability of USD significantly impacts our ability to import necessary components	
USD2	Currency fluctuations affect our pricing strategies and profit margins	
USD3	We face challenges in maintaining stable relationships with international suppliers due to USD shortages	
USD4	Our company's production schedule is frequently affected by USD availability issues	
USD5	We have had to modify our supply chain strategies due to USD accessibility challenges	

4. Results and Interpretation

In this section, the chapter first conducts a quantitative analysis utilizing statistical tools such as SPSS and SmartPLS to examine the relationships and patterns within the dataset.

4.1 Quantitative analysis

The research analysis will systematically explore data using statistical techniques. The investigation begins with descriptive statistics, specifically descriptive of descriptives, to establish foundational insights into the dataset's central characteristics and dispersions. The analysis will then transition to descriptive frequencies, revealing distribution and occurrence patterns across variables. Subsequently, a Spearman correlation analysis will investigate relationships and interdependencies among research constructs. Using SmartPLS, the research will conduct confirmatory factor analysis to validate the measurement model. Path analysis with bootstrapping will test hypothesized relationships, concluding with a comprehensive model fit assessment to ensure analytical robustness and reliability. This methodical approach provides a rigorous examination of research questions through exploratory and confirmatory statistical methods.

4.1.1 Results4.1.1.2 Confirmatory Factor Analysis (CFA)

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Efficiency Management	0.772	0.859	0.753
USD unavailability as Moderating Effect 1: (Supply Chain Process and Sales Growth)	1.000	1.000	1.000
USD unavailability as Moderating Effect 2: (Supply Chain Process and Efficiency Management)	1.000	1.000	1.000
Sales Growth	0.918	0.961	0.925
Supply Chain Process	0.963	0.971	0.846
USD unavailability	0.945	0.959	0.826

Source: Based on SmartPls calculation of the surveyed sample

CFA is applied to observe reliability and validity of factors obtained from the application of EFA. The reliability was measured by Cronbach alpha. All of the variables had a Cronbach alpha higher than 0.7. Therefore, all the statements are reliable to represent the factors in the study. To approach the validity of the statements in expressing the factors, both the composite reliability and the average variance extracted were computed. The AVE of each factor were above 0.5 and the CR was above 0.7. This shows how the statements was valid to be used for the factors.
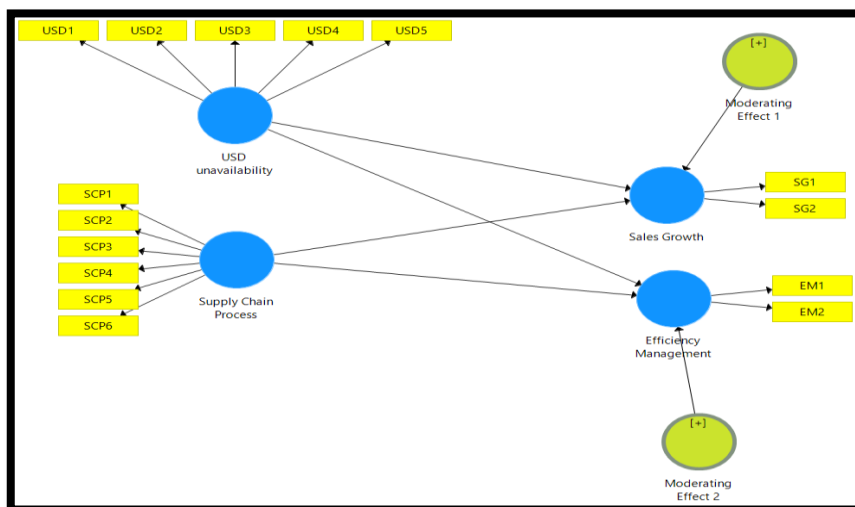
Figure 4. Structural Equation Modelling

Source: Based on SmartPls calculation of the surveyed sample

The previous figure shows how the relationships are built in the structural equation model. All the loading are above 0.7 which gives an indication that no statements shall be removed from the study. The Structural equation modelling is used to investigate the impact of variables on each other. It gives an understanding for the phenomenon. After using CFA, the SEM can perfectly model data due to its assumptions being satisfied.

Table 2. Estimates path coefficient of structural equation model of phenomenon.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	P Values
Supply Chain Process -> Sales Growth	1.091**	1.069	0.213	0.000
Supply Chain Process -> Efficiency Management	1.018**	1.017	0.115	0.000
Moderating Effect 1 -> Sales Growth	0.162**	0.171	0.045	0.000
Moderating Effect 2 -> Efficiency Management	0.051*	0.046	0.022	0.017

Source: Based on SmartPls calculation of the surveyed sample
**p-value<0.01, * p-value<0.05, "" p-value>0.05

After applying SEM, the phenomenon was more understood. From the table above the results of the study indicate that Supply chain process has a positive significant effect on both Sales Growth and Efficiency growth at 99% confidence level. This means that the main and the sub-hypotheses are accepted. (H1, H1a and H1b). In addition, USD unavailability moderates the relationship between Supply chain process and Sales growth at 99% confidence level. While, also USD unavailability moderates the relationship between Supply chain process and Efficiency management at 95% confidence level. This also answers the significance of the suggested hypotheses as (H2, H2a and H2b) are accepted.

4.1.3 Discussion

A key contribution of this study is the emphasis on the moderating role of USD availability in supply chain processes. This research considers USD scarcity's disruptive impact on the Egyptian automotive sector beyond what earlier supply chain studies have examined in terms of financial stability. The automated logistics industry faces substantial obstacles because of its dependence on imported parts which are affected by currency value fluctuations. Studies indicate that insufficient currency access leads to impaired manufacturing efficiency which drives price increases while destructing fundamental practices TQM and JITP. Firms struggle to achieve operational excellence and respond well to market demands because of these disturbances. This work analyzes these impacts to address a significant research deficiency while delivering substantial understanding of financial risks throughout international supply networks in emerging markets starting with Egypt.

This study reveals CRM integration serves as a main developing result in supply chain procedures.

This study provides evidence which extends the conventional view of CRM being a customer satisfaction solution by showing how it affects supply chain management (Chowdhury and Quaddus, 2017). The research demonstrates how IT-based CRM systems create enhanced customer relationships while delivering better demand predictions and personalized service offerings. The established

capabilities enable organizations to raise operational effectiveness together with strengthened employee dedication. The study confirms results that match Grewal et al. (2019) yet adapts conclusions to the distinctive characteristics of the Egyptian automotive sector. Empirical observations confirm that businesses should deploy innovative customer relationship management systems to build responsive supply chains with heightened customer focus (Herden, 2020).

Supply chain performance makes its foundation on efficiency management which this study successfully verified. The research demonstration validates the significance of Lean and Six Sigma principles when applied to reduce waste while delivering maximum value to customers and operations. These efficiencies face potential challenges because external economic factors including USD unavailability can reduce them. This study reveals that optimized supply chains remain exposed to unexpected external disruptions indicating the inherently uncertain nature of supply chain optimization. Organizations require flexible strategies which address internal operations and multiple external risks to maintain effective management (Akhmatova et al. 2022).

The study's results are strongly aligned with theoretical frameworks such as the Resource-Based View (RBV) and Dynamic Capabilities theories. These theories assert that well-managed resources, including IT systems and CRM tools, provide competitive advantages by enhancing innovation competence and efficiency.

These research findings establish practical implementations from these statements while demonstrating their implications within an emerging market scenario. The use of IT systems in supply chain processes effectively enhanced visibility while improving coordination functions and better decision-making abilities that led to superior corporate performance (Shibin et al. 2020). Research revealed CRM tools function as essential supply chain components that enable operational alignment with customer demands while producing enhanced stakeholder relationships and organizational engagement.

The conclusions presented in this research increase conceptual knowledge of emerging markets supply chain management by featuring both research-based theory analysis and operational strategies. Recent research shows how supply chain processes remain essential to corporate performance yet expands existing knowledge through assessments about USD availability specifically suited for Egyptian markets. Through empirical findings and theory validation the study provides businesses with specific guidance to optimize their supply chains while facing market challenges. This research contributes to both literature research and practical supply chain management by covering documented gaps while creating useful content for managers and policymakers studying supply chain complexities in developing market environments.

5. Conclusion

An extensive analysis investigates supply chain processes and corporate performance throughout Egypt's automotive sector as USD availability influences the results. This research moves our knowledge forward regarding the effect of supply chain practices on organizational outcomes within emerging markets while also delivering actionable recommendations to enhance performance resilience for both managers and policymakers. The study demonstrates the numerous dimensions of supply chain management through Resource-Based View and Contingency Theory and Dynamic Capabilities while showing their essential role in corporate achievement.

Leading the study's discoveries stands the proven correlation between properly executed supply chain practices of JITP, TQM and Supply Network Coordination along with Logistics Management and IT integration and CRM which enhance corporate metrics. These metrics include sales growth, operational efficiency, innovation competence, reputational assets, and organizational commitment. By empirically validating these relationships, the study aligns with existing literature while offering localized insights specific to Egypt's economic and industrial environment. This contextualization addresses a critical gap in the literature, providing a nuanced understanding of how global supply chain strategies manifest in a developing market.

Academic Contribution

This study significantly advances the academic discourse on supply chain management (SCM) by addressing a critical gap in the literature related to the impact of supply chain processes on corporate performance in emerging markets, specifically within Egypt's automotive industry. By examining well-established frameworks like the Resource-Based View (RBV), Dynamic Capabilities Theory, and Contingency Theory in the context of a developing economy, this research provides an enriched understanding of how supply chain strategies interact with external economic conditions. Notably, the introduction of USD availability as a moderating variable represents a novel contribution, highlighting the unique vulnerabilities faced by industries heavily reliant on imported components. This addition broadens the scope of SCM studies by integrating macroeconomic factors, thereby enabling more comprehensive modeling of supply chain dynamics in financially volatile environments.

This research creates a foundational basis which future scholars can use when studying supply chain management in comparable yet emerging markets. Empirical evidence supports the development of a strong framework for comparative analysis between contexts along with an approach for future study replication. This research deepens the global supply chain management field by analyzing how supply chain operations blend with market environments and evaluation metrics to open fresh academic frontiers.

Practical Contribution

This research delivers practical recommendations targeting Egyptian automotive sector professionals alongside other similar contexts to develop supply chain resilience and boost corporate outcomes. The practical results from these findings prioritize solutions to cope with USD shortage problems which affect manufacturing facilities using imported parts. Strategic moves encouraged for managerial adoption include developing multiple suppliers as well as backing local manufacturing relationships and currency system diversification. Supply chain operations become more predictable with these integration measures that work to reduce USD dependence and provide stability against currency volatility.

Limitations

This study makes valuable contributions yet contains multiple limitations which require acknowledgment. The study examines the automotive sector exclusively within the Egyptian market space. The reportingvé informations yield crucial data about a discrete new market yet research outputs lack universal applicability across multiple industries and locations. The unique economic rules alongside regulatory requirements and cultural elements found in Egypt do not translate precisely into other market segments which have distinctive macroeconomic foundations. Future investigations should conduct comparative studies that analyze multiple industrial sectors together with

various national markets in order to generalize and validate their outcome findings.

Secondly the use of survey data as quantitative analysis sources includes built-in biases from self-reported measures.

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