

Assignment Title: Analysis of Growing Organizational Quality and Economic Responsibility; Siemens

CONTENTS

CONTENTS	2
INTRODUCTION	4
CHAPTER ONE (ANALYSIS OF THE ROLE AND OVERALL DEVELOPMENT OF SUPPLY CHAIN MANAGEMENT IN SIEMENS).....	5
1.1 THE ROLE OF SUPPLY CHAIN MANAGEMENT ON STRATEGIC CHOICES	5
1.2 OVERALL DEVELOPMENT DRIVEN BY SUPPLY CHAIN MANAGEMENT	6
CHAPTER TWO (EVALUATION OF SUPPLY CHAIN MANAGEMENT OPERATIONAL EFFICIENCY AND COST REDUCTION)	8
2.1 IMPROVING OPERATIONAL EFFICIENCY AND COST REDUCTION IN SIEMENS THROUGH SUPPLY CHAIN MANAGEMENT	8
CHAPTER THREE (ASSESSING SUPPLY CHAIN MODELS FOR SIEMENS).....	11
3.1 OVERVIEW OF AVAILABLE SCM MODELS	11
3.2 SELECTING AND MODIFYING THE SCOR MODEL FOR SIEMENS	12
CHAPTER FOUR (ANALYSIS OF EVALUATING OPERATIONAL EFFICIENCY AT SIEMENS USING THE MODIFIED SCOR MODEL).....	14
4.1 EVALUATING OPERATIONAL EFFICIENCY AT SIEMENS USING THE MODIFIED SCOR MODEL	14
CONCLUDING REMARKS	17
BIBLIOGRAPHY	18

APPENDIX..... 20

INTRODUCTION

SCM is an important factor to establish the success and sustainability of a company in the ever competitive and volatility international market. SCM refers to the processes that relate to the sourcing and procurement, production and supply chain management that forms the core structure of an organization (Aguirre Antonell, 2023). Appropriate supply chain management capabilities may consequently result in improved organizational performance, reduced expenditures and increased socially responsible operations. This paper aims to uncover the importance of SCM through analyzing the case of Siemens AG which is a Germany based multinational enterprise well recognized for its innovation in technology and analyzing how SCM operates in the context of this case, we are able to view how it influences organizational quality and economic accountability (Cozmiuc and Petrișor, 2022).

CHAPTER ONE (Analysis of the role and overall development of supply chain management in Siemens)

1.1 The Role of Supply Chain Management on Strategic Choices



Figure1. Role of supply chain strategies

Source: (Petersen, 2020)

Improving Adaptability and Quick Action

Siemens participates in industries where market dynamics are rather volatile. The agility is even possible to the company since effective SCM can be used to serve as a bridge between manufacturing organization (Petersen, 2020). Another is by using real time data and sophisticated forecast methods, Siemens can anticipate consumers demand in advance and be able to modify the production plan in advance. It means that the company can introduce novelties in its product range, as well alter the existing service providers to meet customer demand more effectively and maintain competition within the market (Bardia Naghshineh, 2024).

Sustainability as a strategic and leadership priority

Supply chain related decisions of Siemens incorporate some aspect of sustainability, within organizational practices, hence environmental concern. To this end, this strategic focus determines suppliers to be chosen, processes to be used in manufacturing, and ways to transport goods (Petersen, 2020). Measures like the efficient utilization of raw materials and energy hence in a way

improves Siemens' corporate image besides meeting legal standards of sustainability. This alignment with sustainability goals not only brings along the green consumers, but it also makes Siemens 'the green' company to do business with (Aguirre Antonell, 2023).

Cost containment and Operational effectiveness

In effective cost management and overall efficient functioning in Siemens, systematic functions of SCM cannot be overemphasized. There is much that can be achieved through effective procurement management and lean production including the reduction of wastage. By adopting JIT inventory systems, Siemens is able to reduce levels of holding costs while at the same time, have the right stocks in the right quantities (Bardia Naghshineh, 2024). Besides improving the bottom-line through cost-efficiencies, it straight aligns to the improvement in profitability to help sustain the company's investment in research and development, acquisitions and other markets (Cozmiuc and Petrișor, 2022).

Innovation and technological advancements

As a technological company, innovation is key at Siemens and has to be in motion always. SCM supports this innovation by providing efficiencies for the development and growth of products and improved cooperation for departments (Aguirre Antonell, 2023). Today, with the help of digital tools like IoT and AI implemented in Siemens' supply chain, big amount of data can be analyzed extremely effectively. Such information provides guidelines for deciding on product changes and additions in a bid to allow Siemens to unveil innovative solutions that meets emerging customer needs (Petersen, 2020).

1.2 Overall Development Driven by Supply Chain Management

Strengthening Market Position

Indeed, through SCM the company has greatly positioned itself well in the global market through efficient SCM. Siemens seeks to achieve the best supply chain management so as to deliver products faster and more efficiently than the other companies. This competitive advantage does not only pull new customers but also make the existing ones loyal hence leading to more business, since they are retained (Bardia Naghshineh, 2024).

Anti-pollution and environmentally friendly habits

Sustainability to Siemens is not just an aspect of giving lip service to compliance; it is part of corporate strategy. A SCM analysis of Siemens shows that the company plays an excellent role in corporate social responsibility by integrating sustainability into the supply chain. I agree with this commitment and believe it also aligns with stakeholders, making the firm's brand more valuable and attractive to socially responsible investors and customers (Aguirre Antonell, 2023).

Sustaining Change

The culture that promotes improvement of Siemens is encouraged by SCM. Through continuous evaluation of the supply chain and its processes, and the adoption of the best practices the company cultivates an environment that embraces innovation (Cozmiuc and Petrișor, 2022). Such a culture leads to providing operational efficiency, and therefore Siemens moves quickly to adjust to emerging technologies and customer requirements.

Facilitating Global Expansion

Currently, Siemens exists in many countries, and availability of a good supply chain is very important for expansion. SCM helps Siemens avoid legal restrictions and adapt to local markets for the proper functioning of the company. On this point, this capability is of strategic importance to Siemens to achieve its strategies of diversification and growth of operations in the international market (Cozmiuc and Petrișor, 2020).

CHAPTER TWO (Evaluation of supply chain management operational efficiency and cost reduction)

2.1 Improving Operational Efficiency and Cost Reduction in Siemens through Supply Chain Management

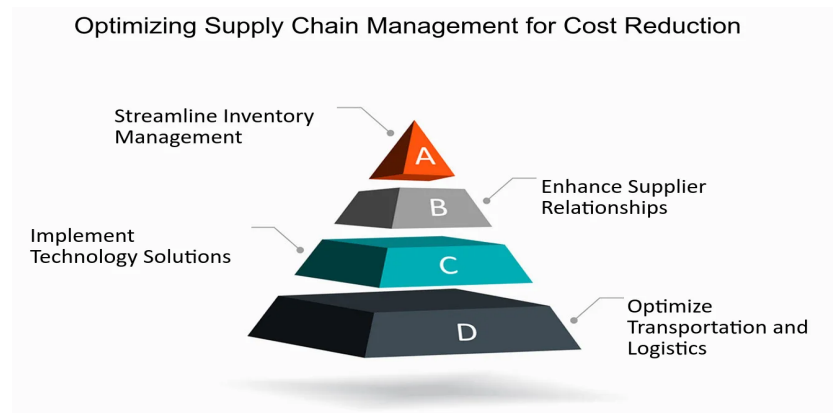


Figure2. Optimizing supply chain management for cost reduction

Source: (Nair et al., 2022)

It is an international company that deals with technology that focuses on automation, digitalization, and smart framework such as Siemens AG. As a global company that deals with the manufacturing and sale of electrical and electronics goods, its operation is complex and large scale to warrant for it to adopt a sound SCM strategy for enhancement of its operations and cutting of expenses (Nair et al., 2022). This evaluation is focused on the identification of a number of critical areas that can be addressed through the implementation of appropriate SCM strategies in order to foster performance improvement across Siemens (Cozmiuc and Petrișor, 2022).

1. Technological Integration

Increasing Reach and Predictability: Internet of Things (IoT) alongside with Artificial Intelligence (AI) are seen as vital for Siemens' supply chain. On the concept of IoT, it noted that many smart devices should be placed coupled with the supply chain in order to gather information regarding stock, production, and transport in real-time (Cozmiuc and Petrisor, 2020). For instance, enhanced demand forecasting enhances the possibility of the company to match production cycle

with demand cycle, thereby minimizing on the volume of excess stocks and service costs (Nair et al., 2022).

Improving Supply and Time Management: Logistics can also become one of the areas where AI can on important for the optimization of the logistics. Sophisticated mathematical models can also work with historical information and current market data to define which routes and schedules are optimal for transportation. This leads to decreased fuel expenses, overall transportation costs and, delivery time cycle (Harun, 2023). When logistics operation is conducted effectively, it results to the improvement of the total operating efficiency of Siemens.

2. Lean Manufacturing Practices

Eliminating Waste: The lean manufacturing principles must be implemented in the Siemens in order to improve its efficiency. Lean methodologies are all about getting rid of waste and finding more value. Tools like VSM can be applied for comprehending the actual patterns in SCN and decide what actions are not beneficial for the business. Thus, by centralizing activities and optimizing processes, Siemens has a possibility to enhance its performance drastically (Nair et al., 2022).

JIT or Just in Time Inventory Management: The practice of Just-in-Time (JIT) inventory system is the other technique that an organization can adopt as a way of minimizing on the costs (Zhang et al., 2021). JIT's idea call on suppliers to bring materials only when they are required in the production line. It also cut irregular flow of inventories so as not to accumulate high costs of holding inventories as well as avoid cases of an obsolete stock (Harun, 2023).

3. Supplier Relationship Management.

Strategic Sourcing: This appears to be so because the real supply chain relationships are with suppliers, and these are some of the areas that need focus. Strategic sourcing also allow Siemens to assess and choose the suppliers on the basis of more criteria including cost, quality, and reliability. Successful cooperation between the company and its suppliers may result in partnership in innovation processes as well as in bulk-buying contracts (Cozmiuc and Petrisor, 2020).

Performance Monitoring: Conducting a proper supplier performance evaluation is critical to sustaining necessities regarding quality and services. Measuring the performance of their suppliers

often allows Siemens to spot poor performers and solve problems before they escalate. In this way, Siemens can increase its differentiation of supply chain efficiency, by making certain that suppliers meet the desired performance criteria (Gamze Tatlici and Begum Sertyesilisik, 2021).

4. Sustainability Initiatives

Circular Supply Chain Models: Adopting sustainable strategies in the supply chain can reduce operation cost and have increased returns. Regarding sustainability, new and innovative supply chain practices, strategies such as re using and recycling materials could easily be adopted by Siemens (Nair et al., 2022). It also helps in cutting the price of raw materials and, at the same time, reduces wastage – a plus for the organization in attaining world sustainability objectives (Petrisor and Cozmiuc, 2020).

Energy-Efficient Logistics: Another area of improvement is logistics – this aspect of has to be as efficient as possible in terms of energy use. Therefore, through the use of other sources of energy and effective route planning, Siemens can cut on expenses of transport and at the same time contribute to environmental conservation (Gamze Tatlici and Begum Sertyesilisik, 2021). Applying energy management measures enhances organizational effectiveness and is an indication of organizations' responsible behavior.

5. Flexibility In Supply Chain Management

Responsive Production Systems: Since the world economy is fast growing, the supply chain management should be flexible enough. Therefore, Siemens can adopt FMS which can be adapted easily and in responsive manner with the dynamic signals of demand. This responsiveness reduces on time substantially and it means that the production line serves the customer needs better (Manikas et al., 2022).

Diversifying Suppliers: Managing materials sourcing through expanding the number of suppliers can contribute to the risks connected with tensions in the global political environment or disruptions in supplied materials' delivery. Having local suppliers empowers the supply chain, decreases response time, and lowers transport costs (Gamze Tatlici and Begum Sertyesilisik, 2021). This kind of strategic diversification acquires a better organizational structure and at the same time enhances the supply chain.

CHAPTER THREE (Assessing supply chain models for Siemens)

Supply Chain Management (SCM) plays a strategic function in any organization, affected and influencing organizational performance, cost and customer and perceived value (Petrisor and Cozmiuc, 2020). This paper aims to show that due to Siemens' diverse areas of business the SCM strategy needs to be managed differently. This assessment compares and contrasts diverse SCM models, and recommends an improved SCOR model to apply to Siemens (Cozmiuc and Petrisor, 2020).

3.1 Overview of available SCM models

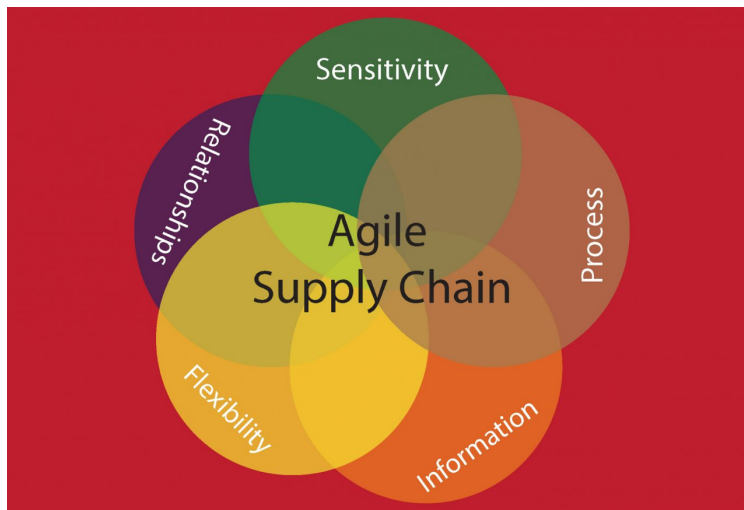


Figure3. Agile supply chain model

Source: (Harun, 2023)

Though it is relatively easy to maintain the various SCM models above as mere academic exercises, it is important to understand that these models cannot exist by themselves without an environment to support them (Harun, 2023).

SCOR Model

The SCOR model is one of the most popular SCM frameworks known worldwide. It focuses on five key processes: Plan, Source, Make, Deliver, Return. This model offer a sound framework of benchmarking, process mapping and performance measurement in supply chain management for the identification and management of performance gaps (Leeman, 2020).

Lean Supply Chain

Under the Lean model waste minimization and the delivery of more value to customers are of paramount importance. It aims at reducing the wastage activities from the business with intention of making the business processes effective and less expensive (Manikas et al., 2022). Focusing on operations is especially helpful for manufacturing because it needs to be lean.

Agile Supply Chain

The Agile model of project management is based on flexibility and ability to respond quickly to the changes in the markets. This is especially useful, in environments with fluctuations in demand frequency or where changes are prone to happen (Petrisor and Cozmiuc, 2020). As it was mentioned, agile supply chains flexibility which enable organizations respond to customers' demand as well as market demands.

Hybrid Supply Chain

The Hybrid model is derived from the Lean and Agile models, but it has some features from the two. That way, firms are able to both be efficient as well as adaptable to shifts in customer requirements. Thus, this model is appropriate for organizations functioning in settings that demand moderate levels of change and adaptation (Leeman, 2020).

3.2 Selecting and Modifying the SCOR Model for Siemens

Of all the value models, SCOR is particularly useful for Siemens for two reasons; first, for its broad coverage and second for its concentration on performance measures. Using this type of model, Siemens can effectively analyses its affected supply chain operations in a structured manner to consider their efficiency (Manikas et al., 2022).

Implementing the SCOR model involves several key steps:

Define Scope: Determine which supply chain processes are to be examined in terms of the proposed technique. In the case of Siemens, the strategic management could require just the operational strategies as far as producing and distributing a given product line like industrial automation equipment (Leeman, 2020).

Assess Current Performance: Collect information on the organization's ongoing activities in order to build a benchmark. This include lead times, inventory status, and the order delivered rates (Schuh, 2022).

Identify Gaps: Superimpose corporate performance on best practices defined by the SCOR model and industry average to identify opportunities for improvement (Schmidt et al., 2022).

Develop Improvement Strategies: Plan how to increase efficiency and decrease cost. This can include things like implementing new technologies that can be adopted in realizing the change, changing the way that suppliers are managed or changed process maps (Manikas et al., 2022).

Implement Changes: Implement the strategies laid down while making stakeholders to ensure that they purchase the change while making necessary changes to the employees (Zhang et al., 2021).

Monitor and Review: Monitor the effects of an on-going change and fine-tune it for the best result in an organization. The audits ensure that there is always check and balance in regards to strategic direction of the firm (Manikas et al., 2022).

CHAPTER FOUR (Analysis of evaluating operational efficiency at siemens using the modified SCOR Model)

4.1 Evaluating Operational Efficiency at Siemens Using the Modified SCOR Model

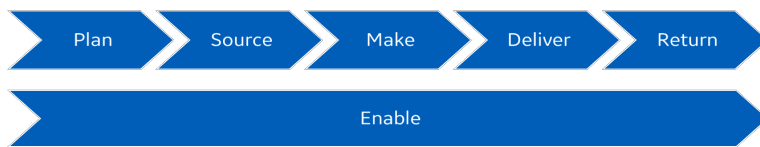


Figure4. SCOR Model

Source: (Leeman, 2020).

Siemens is one of the world's largest technology and innovation companies that has business in automation, electrification, digitalization, and much more. For gaining a better understanding of our current state of operations and for improving the efficiency of the supply chain, the SCOR model modified to include sustainability and digitalization concepts will be used (Leeman, 2020).

1. Plan

Advanced Planning and Sustainability Integration

In the planning phase, this company relies on the use of advanced tools in analytics and Artificial Intelligence where it is possible to forecast about 90% accuracy. These technologies improve demand estimation thereby improving the level of synchronization of the production schedule with the market needs of the company (Manikas et al., 2022) . These concepts, like eco-efficiency or reduction of sources utilization, do not only enhance the primary organizational performance, but also bring tangible benefits in terms of a company's image as a non-harmful member of society which uses resources sparingly (Schmidt et al., 2022).

In planning there is a proper emphasis on sustainability that is suitable for Siemens in terms of preventing more inventory stock facing carrying cost consequences (Shih, 2023). The approach also results in better cash flow and efficient use of other resources hence increasing efficiency.

2. Source

Strategic management of Suppliers: Relationship and Sustainability

The sourcing component underscores relationship management with supplier while incorporating sustainable sourcing. Reliability and quality are important for maintaining efficient operations which need strategic partnerships, which Siemens use. Siemens will be benefiting through receiving suppliers goods and services which are compliant to sustainable practices thus promoting sustainability in the supply chain (Schmidt et al., 2022).

On top of ensuring that risks relative to supplier disruptions are managed, this focus on sustainable sourcing also helps cut costs relative to non-conformance and waste levels (Schuh, 2022).

3. Make

Lean and Agile Manufacturing

During the manufacturing phase, it is normal for any form of production to experience wastes and hence the adoption of lean practices by Siemens. WCM activity which involves value stream mapping excels at decoding and expunging non value add process thereby creating value. This is supported by the lean manufacturing activities, coupled with agility performance that makes Siemens to be opportune to adjust to customers' varying needs (Zhang et al., 2021).

Use of sensors through the IoT and automation enhances the productivity of manufacturing processes. Time analysis allows constant tracking and modification; therefore, it decreases the rate of stoppage and increases production rate (Shih, 2023). Using lean and agile together, Siemens will be able to optimize the flow of operation in manufacturing as depicted below.

4. Deliver

Logistics Optimization and Digital Tools

During the delivery phase, the adopted SCOR model points to the use of digitization in bolstering the logistic optimization. Another area in which Siemens employs AI technology is in relation to the routing of the delivery vehicles in a way that will enable the delivery to be done on time hence reduce the cost of transportation (Schuh, 2022).

Also, the subject of logistics at the company creates a lean environment that minimizes the carbon footprint as a result of its sustainability focus. Adopting energy-efficient means of transport also decreases expenditures when compared to traditional means, apart from being an environmentally friendly activity (Schmidt et al., 2022).

5. Return

Circular Economy Principles

The returns process is conducted at Siemens based on circular supply chain procedures that include recycling and remanufacturing. This largely benefits sustainable operations by cutting down on waste and recycling worthy materials for use in the future. If it implements effective returns procedures, it is possible for Siemens to keep the expenses on future product returns low while satisfying consumers (Schuh, 2022).

Adopting a rigorous returns process is consistent with the company's sustainability objectives while also optimizing cost-cutting effect (Shih, 2023).

CONCLUDING REMARKS

Supply Chain Management is a core business element in operations for large companies such as Siemens as it provides key advancement elements in operation efficiency, costs, and sustainability. Consequently, the growing importance of SCM and the employment of proper models as the SCOR framework make it possible to develop the regularities for the improvement of supply chains systematically. The benefits of efficient SCM are many, including better processes, higher product quality, better inventory, and better sustainability. Although the future trends of the global market might seem uncertain, the importance of SCM will remain decisive for increasing organizational quality and promoting economy responsibility. SCM, therefore, holds the potential of improving Siemens competitive advantage whilst creating value for stakeholders and the environment. Combining all these aspects as a result of driving up consumer expectation and environmental consciousness makes it mandatory for companies to demonstrate their commitment to good supply chain frameworks for sustainability.

BIBLIOGRAPHY

Reference list

Aguirre Antonell, P. (2023). *Design of a tool to drive improved supply chain planning decisions within the semiconductor industry*. [online] upcommons.upc.edu. Available at: <https://upcommons.upc.edu/handle/2117/397060>.

Bardia Naghshineh (2024). Additive manufacturing technology adoption for supply chain agility: a systematic search and review. *International Journal of Production Research*, pp.1–33. doi: <https://doi.org/10.1080/00207543.2024.2356629>.

Cozmiuc, D. and Petrișor, I. (2022). Empirical Evidence on how Smart Connected Products' Capability Maturity Impacts Players' Portfolio Strategy: A Case Study on Siemens. *Eurasian Studies in Business and Economics*, pp.79–98. doi: https://doi.org/10.1007/978-3-030-94036-2_5.

Cozmiuc, D.C. and Petrisor, I.I. (2020). *Siemens' Customer Value Proposition for the Migration of Legacy Devices to Cyber-Physical Systems in Industrie 4.0*. [online] www.igi-global.com. doi: <https://www.igi-global.com/chapter/siemens-customer-value-proposition-for-the-migration-of-legacy-devices-to-cyber-physical-systems-in-industrie-40/231226>.

Gamze Tatlici and Begum Sertyesilisik (2021). Integrating Performance Measurement Systems Into the Global Lean and Sustainable Construction Supply Chain Management. *IGI Global eBooks*, [online] pp.160–177. doi: <https://doi.org/10.4018/978-1-7998-9032-4.ch007>.

Harun, M.R.I. (2023). Comparative analysis between Siemens Elevator and other competitors. *dspace.bracu.ac.bd*. [online] doi: <https://dspace.bracu.ac.bd/xmlui/handle/10361/23353>.

Leeman, J. (2020). *Supply Chain Management*. [online] Google Books. doi: <https://books.google.com/books?hl=en&lr=&id=0Gj7DwAAQBAJ&oi=fnd&pg=PR11&dq=overall+development+by+supply+chain+management+siemens&ots=FRz6-K4HWW&sig=JZqUas7XqZKYb1-6gKmgQhYEs64>

Manikas, I., Sundarakani, B., Madmoune, A. and Alvares, R. (2022). Integrated Supply Chain Sustainability for Mega-events: An Empirical Study of Dubai Expo 2020. *Event Management*. doi: <https://doi.org/10.3727/152599522x16419948391032> .

Nair, P.R., Anbuudayasankar, S.P., Kishore, R. and R. Pradeep (2022). Industry 4.0 Research: Information and Communication Technology Capability Index for Supply Chain Management. *Lecture notes in mechanical engineering*, pp.97–117. doi: https://doi.org/10.1007/978-981-16-4083-4_9 .

Petersen, N. (2020). Towards Semantic Integration of Supply Chain and Production Data. *Uni-bonn.de*. [online] doi: <https://hdl.handle.net/20.500.11811/8762> .

Petrisor, I. and Cozmiuc, D. (2020). *Global Supply Chain Management Organization at Siemens in the Advent of Industry 4.0*. [online] Supply Chain and Logistics Management: Concepts, Methodologies, Tools, and Applications. doi: <https://www.igi-global.com/chapter/global-supply-chain-management-organization-at-siemens-in-the-advent-of-industry-40/239318>.

Schmidt, I., Morris, W., Thomas, A. and Manning, L. (2022). Smart Systems: The Role of Advanced Technologies in Improving Business Quality, Performance and Supply Chain Integration. *Standards*, [online] 2(3), pp.276–293. doi: <https://doi.org/10.3390/standards2030020>.

Schuh, C. (2022). *Profit from the Source*. [online] Google Books. doi: <https://books.google.com/books?hl=en&lr=&id=g604EAAAQBAJ&oi=fnd&pg=PT9&dq=siemens+supply+chain+proficiency&ots=h77XM2-Pjw&sig=x9RYHRLI8kWnNMgs27LwFeI3XJM>

Shih, W. (2023). *Supply Chain: The Insights You Need from Harvard Business Review*. [online] Google Books. doi: <https://books.google.com/books?hl=en&lr=&id=KYCrEAAAQBAJ&oi=fnd&pg=PT2&dq=siemens+supply+chain+proficiency&ots=QHixZt2GxW&sig=SZ72Md2dhHeBRDF1KDJ54sdwcK4>

Zhang, J., Brintrup, A., Calinescu, A., Kosasih, E. and Sharma, A. (2021). *Supply Chain Digital Twin Framework Design: An Approach of Supply Chain Operations Reference Model and System of Systems*. [online] arXiv.org. doi: <https://doi.org/10.48550/arXiv.2107.09485>.

APPENDIX



Optimizing Supply Chain Management for Cost Reduction

