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**Operation capability in supply chain**

**MBA Thesis**

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## **Abstract**

In this study, we analyses the relationship between the characteristics of manufacturing firms and the dimensions of their operational capacities. This study evaluates the importance of managers' and academics' understanding of operations skills, and how these abilities differ across manufacturing enterprises in high-cost environments. Empirical studies have shown that in high-priced scenarios, delivery, pricing, and flexibility are the most important factors in securing an order, with quality coming in a distant second. However, the relevance differs widely across the many aspects of a manufacturer's operation. Managers of manufacturing organizations operating in high-cost environments may utilize these findings to verify and fine-tune their operations strategy.

# **1. Chapter One Introduction**

## **1.1 Rationale for the Research (Research Background)**

Increased competition in the economy has led to a greater want for innovative products and services. To remain competitive, businesses must provide superior goods and services, as well as original creations (Koufteros et al., 2002). In addition, organizations struggle to make rapid adjustments to their manufacturing procedures owing to a shortage of resources including time and human capital (Sansone et al., 2017). The primary objective of this study is to provide a proper framework for monitoring and assessing how an organization's production processes and marketing strategies interact with one another. The result will be an increase in manufacturing firms' productivity and an improved ability to compete.

Due to rising competition and shorter product life cycles, time-to-market has become more important in order to differentiate from competitors and sustain a company's long-term competitive edge. To succeed in today's market, manufacturers need to embrace competitive skills that put the customer first and provide them an edge over rivals (Hallgren et al., 2011).

The primary objective of the research is to determine what factors have an impact on Swedish manufacturers' decisions to relocate production back to the country. To do this, we first conduct a literature review to learn what has already been learned about restoring. By analyzing and critiquing existing studies, we want to develop a plan for further study on the effects of restoring on Swedish manufacturing companies. As part of this initiative, we surveyed 121 people (top management/senior managers at small and medium-sized enterprises) using a client relationship management instrument we developed for this purpose. The globalization of the industrial industry has led to the emergence of low-cost environments. This development and expansion may be ascribed, in large part, to the effective utilization of labor, energy, and raw materials, as well as to the availability of centralized transportation networks and a stable political environment (Bailey & Propris, 2014; Tate et al., 2014). Both the quality of the product and the services provided by the business are affected by these factors (Bailey & Propris, 2014; Tate et al., 2014). Due to the increasing complexity of company policies and the breadth of available products and services, organizations need new kinds of skills to achieve and maintain market leadership. Operations is a crucial area where firms must improve performance in light of new kinds of capabilities. Finding out how operations managers see their current position in

light of these new skills is, thus, the primary objective of this research. To address these concerns, researchers in both academia and industry conducted an empirical survey of operations managers to learn their thoughts on the training needs for six crucial operations skills. Strategic capabilities are seen as the foundation for a sustainable competitive advantage. In order to stay ahead of the competition, organizations need to capitalize on their strategic competencies (Grant et al., 1996; Mohr & Spekman, 2003).

## **1.2 Research Questions**

Since operational capabilities are becoming more important, a comprehensive literature analysis on capacity dimensions and capabilities is lacking. Specifically focusing on manufacturing enterprises in both high- and low-cost settings, this study aims to fill this knowledge vacuum by assessing the current state of operational capacity dimensions and capabilities in these markets.

Measuring and evaluating operational skills from the outset of goal attainment is essential for developing and maintaining a competitive advantage in today's high-cost industry. The design proposed by Hilletoft and Sansone (2018) enhances the effectiveness of group operations. Furthermore, the results of their research show that these factors have a greater impact on business outcomes than do individual activities or inputs. This research looks at how strategic management may improve organizational performance. We can't go forward with subject development without first doing background research. As a result, the driving inquiry behind this thesis is:

**RQ1: How do operations capability dimensions in a high-cost environment contribute to competitive advantage and which ones are important?**

Regression analyses are crucial for studying manufacturing firms. The objective is to determine which independent variables are really important while controlling for all other confounding variables. Understanding and enabling the characteristics of manufacturing enterprises is the focus of this research, which shows which characteristics and operational abilities are necessary for doing so. As a result, the second research topic of this thesis is:

**RQ2: How do the important operations capability dimensions and operations capabilities differ based on manufacturing firm characteristics?**

In addition, a survey study of Saudi Arabian manufacturing firms operating in high-cost environments will be conducted to answer the research questions.

## **2. Literature Review**

The primary objective of this study chapter is to offer a complete assessment of the available research on restoring, competitive advantage, and operations strategy in order to support the empirical inquiry in chapter 2. As a consequence, it gives context for the research questions by discussing the appropriate literature. The literature review defines key terms like "strategic capabilities" and "operations strategy" and provides a synopsis of relevant research on restoring and its relation to competitive advantage. Manufacturing processes, quality management, inventory management, and product development are only some of the various operational capacity types covered in this chapter.

### **2.1 Operations Management – strategy**

Organization and integration of business processes, supply chain management, and operations are at the heart of an effective operations strategy (Cruz & Rodriguez, 2008). Aligning a company's business and operations is crucial to its growth and success. The most effective scheduling algorithm, inventory management system, or production process are just a few components of a comprehensive operations plan. It's about so much more than that. Everything that goes into making a product exists under this umbrella, from advertising and sales to manufacturing and distribution.

In order to achieve operational excellence, the most important factor is an operations management plan that details the steps to take in order to realize both the company's objectives and the goals of manufacturing operations duties (competitive priorities) (Sansone et al., 2017). This method paves the way for and efficiently disperses assets that may be put to use decreasing expenses or increasing profits (Koufteros et al., 2002).

The ability to execute the company's strategy and vision are inextricably intertwined. Operations capabilities are the set of skills needed to carry out an organization's strategy effectively. For instance, if a company wishes to provide novel products to the market via product design innovation, it must possess certain product design skills that its competitors may lack. The sum of these skills is a vital core competence that sets one apart from one's competitors. On the other hand, some companies place less emphasis on differentiating themselves from rivals than others do on generating efficient, cost-effective products by using their operational strengths (Größler & Grübner, 2006).

### **2.1.1 Competitive priorities**

Strategic performance management takes into consideration a variety of elements, including those related to an organization's competitiveness and ability to withstand competition. In their study, Hayes and Wheelwright (1984) defined competitive priorities as "the method and mode of competition of the firms, it was also mentioned that these items must be contained to sustain the firm's competitive strategy."

Operations skills are critical to manufacturing organizations since they determine how well a company can compete in the market as opposed to what enterprises should do to be competitive. The present research argues that operations skills are nothing more than a set of measures that, when taken together, help a company achieve its profit, quality, and efficiency targets. However, not every company in the same industry gives the same weight to these considerations. Operations capabilities have been demonstrated to fall into two categories (Prester et al., 2016): those concerned with developing the value chain design, and those concerned with boosting the supply chain's efficiency via tactical actions.

### **2.1.2 Operations capabilities**

The term "operations capabilities" refers to a well-known set of assets, competencies, and procedures that help firms succeed (Geraci et al., 2001). Operations capabilities need to be enhanced and developed as a central part of the operations strategy in order to establish a suitable competitive advantage in different market scenarios that will serve as the basis for competition between organizations. Operations capability refers to a company's potential to effectively allocate resources to running its business.

An integral part of the operations strategy is the upkeep and growth of operational capacities in response to shifting requirements. As a result, in order to carry out the company's strategy, you need to be able to predict how the market will develop. In order to remain competitive in the face of rapid changes in consumer demand for products and services, businesses need operational skills that are both flexible and responsive.

This research paper examines the seven capabilities of operations and the related processes (price, timeliness, quality, service, sustainability, adaptability, and innovation). Four major operations capacity characteristics have been developed and enhanced in the literature (Ferdows & De Meyer, 1990; Größler & Grübner, 2006; Hallgren, 2007): cost, flexibility, quality, and delivery. The rapid



evolution of both technological innovation and social factors in markets necessitates the recognition of three additional aspects in the literature: All three of these are essential for long-term success (Alsmadi et al., 2011).

## 2.2 Operations capability framework

A comprehensive list of critical operating competencies was compiled, resulting in Table 1. This operational competency framework was developed after a careful, systematic analysis of the relevant literature and many case studies. Given the breadth of the many studies, one could argue that this framework is useful for any number of different kinds of organizations, including small businesses with limited operations personnel that lack the resources to build their own practice management systems. The structure should work for large companies who have a practice management system in place but would want to improve it by integrating new talents into their approach.

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<b>Dimension</b>	<b>Capability</b>	<b>Definition</b>
Cost	Cost efficiency	We consider it as The ability to distribute and manufacture products at a low cost
	Process efficiency	The capability of maximizing utilization of process resources
	Flow efficiency	The capability of maximizing the output of the process
Quality	Product quality	The capability of manufacturing high performance products
	Process quality	The capability of manufacturing with consistent quality
	Product durability	The capability of manufacturing durable products
Delivery	Delivery dependability	The capability of delivering on time

	y	
	Delivery speed	The capability of delivering in a short time
Flexibility	Delivery flexibility	The capability of changing delivery times and quantities within the agreed upon delivery time
	Volume flexibility	The capability of responding to changes in demand volume
	Product mix flexibility	The capability of changing the manufacturing product mix
	Product flexibility	The capability of customizing products based on customer requirements
	Product line flexibility	The capability of providing a wide range of products with different features

Service	Customer service	The capability of providing customers with service prior to product delivery
	After sale service	The capability of providing customers with service after product delivery
	Advertising	The capability of advertising and promote products
	Distribution	The capability of distributing products broadly
Innovation	Product innovation	The capability of developing and introducing new products
	Technology innovation	The capability of developing and implement new technologies
	Service	The capability of developing and introducing new

	innovation	services
	Market innovation	The capability to find and exploit new markets and opportunities
Sustainability	Product sustainability	The capability of manufacturing sustainable products
	Process sustainability	The capability of manufacturing and distribute products in a sustainable way
	Employee flexibility	The capability of employees to perform different types of tasks (Multi Task).

### Cost dimension

Profitability in a competitive market while reducing production and distribution costs via the use of cutting-edge technology and improved distribution channels defines cost efficiency.

Profitability in a competitive market requires cost efficiency, which is achieved by reducing production and distribution costs via technological advances and innovative distribution channels.

Cost efficiency is the degree to which sales and profits are increased while manufacturing and distribution costs are decreased.

Second, in terms of the process efficiency cost factor, a core capability for operations is the ability to make the most of available process resources. Companies may improve their capacity utilization by making the most of the tools they already have (Alsmadi et al., 2011; Sansone et al., 2017). Companies priorities this in order to maximize capacity utilization while also considering the cost factor (Chi, 2010).

Improving process efficiency is an important tactic for getting the most out of the resources available in a given process. Many processes overproduce because they were designed to provide buffers and produce a high-quality end product. This can cause

unnecessary expenditures and idle machinery.

Output optimization capability is the third operational capability along the cost axis. Considerations such as labor and machine productivity and efficiency are included in an effort to increase output by prioritizing these two factors.

The ability to maximize productivity is a fundamental factor in achieving greater competitiveness. Both human and mechanical labor efficiency and output are included. Sansone et al. (2017) find that an increase in output increases competition.

### **3. Research methodology**

The methodology used to compile this thesis is grounded on a research philosophy. The inductive and all-encompassing technique used to develop the study's conceptual framework lends credence to this outlook. In the next chapters, we'll examine in detail how this research methodology has been implemented in practice, including topics like survey creation, data processing, and quality assurance.

#### **3.1 Research philosophy**

The basic premise of this inquiry is the central idea, which refers to assumptions about the nature and existence of reality. The multiple "truths" that "change from region to area and from era to era" and the ontology of relativism are taken as true in this investigation. In my opinion, the most important operational skills change with context and with the many types and formats of manufacturing businesses.

This theory employs a relativist ontology. As a result of differences in experience and background, different truths emerge, or so the theory of relativism goes. Given the nuanced nature of core competencies across industries, we believe that critical constraints vary widely across manufacturers.

#### **3.2 Research approach**

This thesis uses a logical approach. The decision was backed by data from pilot projects aimed at

making the framework more empirically oriented. Previous scholarly work on operational level capabilities served as the basis for the framework. As part of a qualitative data collecting strategy, semi-structured interviews were conducted to gather descriptive information. This technique is associated with positivist epistemology, which holds that numerical methods are superior for the development and testing of hypotheses (Saunders et al., 2016). Exploring uncharted territory and putting findings into practice are two of qualitative research's many benefits (Bryman & Bell, 2011; Saunders et al., 2016).

Researchers that are interested in quantifying and assessing the degree of association between or among multiple elements, including math ability and IQ, should conduct a quantitative study, as stated by Saunders et al. (2016). The author must investigate the connection between the independent and dependent factors. The author will generate a set of questions that readers will answer based on how well they understand the material covered in each section. The research questions will be thoroughly investigated in the questionnaire, which will be generated online or in paper form to aid and make the responses easier to deliver.

### **3.3 Research design**

Measuring and evaluating the operational capabilities framework in a high-stakes setting is the focus of this study. The study's principal objective is to learn how these extensive offerings may help an organization improve its operational prowess and establish best-in-class supply chain procedures. For this reason, it was essential to discuss the theoretical perspectives in order to define the research components. Following an explanation of the steps involved in actually collecting the data, the methods used to analyses it will be presented in light of the objectives.

### **3.4 Data Collection**

The questionnaire was designed and tested to guarantee reliable and high-quality results from the survey. In order to spark the interest of the respondents, it is essential to explain the relevance of the study and the value of participation by articulating the purpose of the research. Therefore, after detailing the aims of the study, the design introduction was used. Clearly articulating the benefits of participation and data submission to each side was essential (Rea &

Parker, 2014). Privacy and confidentiality worries were also eased. In addition to these gains, respondents were given some introductory questions, then some questions about their histories, and finally some questions on relevant parts of the companies' features.

The purpose of the pre-objectives testing was to verify the market survey results and ensure the questions were clear and easy to answer. This was done before the main data collection method to get a sense of the questionnaire's accuracy and quality and to catch any grammatical or spelling errors. Our limited sample size allowed us to learn whether or not our study could be replicated with a bigger population in future studies.

### **3.5 Data analysis**

The first and most crucial step in the analysis process that must be completed if reliable and accurate findings are to be obtained is the finalization and analysis of the data. Closed-ended questions with just yes/no answers were also quantified by translating the non-numeric data into numerical variables, since most of the data were numbers allocated to specific places on a numerical scale. On this basis, we compiled our information in the form of a data matrix, with separate variables listed in the columns and survey answers in the rows. Data may be evaluated using analytical tools if they are presented in this standard format.

First, we checked for inaccuracies after finishing data collection and cleaning. We removed a few inconsistencies we noticed to guarantee the accuracy of our data. Before we could look at each dimension separately, an error check was performed on all variables. Using this method, we learned that the overall importance is rather high, despite the exceedingly low rankings of the underlying bases. As a result, these considerations were dropped from the research.

## **4. Data Analysis & Presentation of Results of Findings**

In the first chapter, we introduced the research questions and methods used to create the conceptual model. This section details the study's empirical findings, provides insightful interpretation of those findings, and calls attention to both the substantial differences and the apparent similarities between the operations capability dimensions and the operational capabilities. The features of manufacturing companies and the high-cost problems encountered by such businesses are covered in detail in this chapter. The implications of these findings for management practice and directions for further study are discussed in the last section.

### **4.1 Evaluation of high-cost environments**

With any luck, this article will provide light on the challenges that expensive manufacturing enterprises confront. It is clear from the available evidence that operations capability plays a significant role inside the operations capability framework. The study of operations capabilities within a given setting was approached from several angles. We implemented it in diverse contexts and cost structures. Thanks to this strategy, we were able to recognize trends and compare conditions in many different settings.

#### **4.1.1 Dimension level**

Dimension level studies were conducted to ascertain the relevance of the capacity dimensions across manufacturers. The tiers of the dimensions are the industry, the product, and the process. At the business sector level, the average value of all competences was larger than three. Nonetheless, the lowest score is closer to four, which indicates that all competency traits are seen as vital or highly significant. According to the ranking of the mean values (Table 2), quality is the most important capacity feature, followed by delivery. These traits are given far higher marks than the rest of the competency qualities. The standard deviations of quality and timeliness are also much lower than those of the other factors. This narrower dispersion indicates more reliability and resilience. The standard deviation tends to get down as the rankings become lower.

### **4.1.2 Operations capability level**

This study shows that the standard deviation of the top five operations capabilities (product quality, delivery dependability, process efficiency, flow efficiency, and product sustainability) is lower than those of the other capabilities. The correlation between standard deviation and position is another interesting finding. These findings provide support to the theory that operational abilities are not accorded similar weight by all companies. Would a company's competitive edge improve if it focused on fewer operational competencies? There must be further research done.

## **4.2 Evaluation of manufacturing firm characteristics**

Characteristics of manufacturing organizations are evaluated by looking at their industry categories, size, customer emphasis, and production strategy. The operations capability level was analyzed after the dimension level using the same calculation and ranking technique. Each of the four characteristics is broken down into its own subchapter and compared to the others.

### **4.2.1 Industry classifications**

The National Statistical Classification of All Economic Activities (NACE) was utilized as the basis for this study's industry categories. All of the items in the supply chain, from raw materials to finished machinery, are taken into account. Intermediate commodities, in contrast to non-durable consumer goods, are products that are only half finished but are nonetheless used as manufacturing inputs. Last but not least, the use of capital assets is essential in the production of commodities and services.

#### **4.2.1.1 Dimension level**

Capability analysis at the level of dimensions consistently ranks quality as the most important factor across all product categories and capital goods. Quality has the narrowest range of variance across all competencies across all industrial categories, with the exception of long-lasting consumer goods. The sustainability factor ranks third for both durable and non-durable consumer items, and fourth for intermediate and capital goods. The importance of cost is lower for intermediate and non-durable



consumer goods, but much higher for durable goods, coming in at number two, and second for capital goods.

Quality is the most important capability across all but one industry categorization, and other competencies are equally important across all categories. Meaning quality is crucial for providing value and meeting consumer needs throughout the board. Quality, longevity, and price are the next two most important factors.

#### **4.2.1.2 Operations capability level**

In the operations capability level, the capabilities averaged at least 2. In terms of the quality dimension, the operations capability product quality ranks highest. The importance of a high-quality process cannot be overstated in any sector. However, the importance of capital goods is somewhat diminished when compared to the other types of products. Although capacity cost efficiency is of greater importance for intermediate and capital goods, it is less so for consumer goods that are either long-lasting or easily replaceable. Delivery reliability is among the top five operational qualities used by customers to evaluate the efficiency of suppliers in all industries.

## **5. Conclusions, Implications and Recommendations**

### **5.1 Research questions and purpose**

This thesis seeks to address two research objectives: (1) to analyze the most important aspects of operations capacity; and (2) to evaluate operations capabilities for competitive manufacturing in a high-cost environment and how they vary dependent on features of manufacturing companies. The results are in line with some of the most recent studies in key areas such as market focus, product complexity, and international scope. Moreover, additional factors were uncovered that are more important than those previously studied, including the effectiveness of inventory management. These findings may be used as benchmarks by firms since they provide an analysis that may help managers compare their own talents to those of comparable organizations within the same sector or even internationally.

#### **Answering RQ1: What is the most important operations capability dimensions and operations capabilities for competitive manufacturing in a high-cost environment?**

The results of the regression analysis show that all of the features of the operations capacity are important, while quality is the most critical. Every operational capability matters much in today's high-priced environment. Higher levels of all operational skills were shown to increase the productivity of manufacturing businesses functioning in high-cost conditions.

#### **Answering RQ2: How do the most important operations capability dimensions as well as operations capabilities differ based on of manufacturing firm characteristics?**

As the field of operations research grows in breadth and depth, so too must the ability of businesses to adjust to ever-evolving market circumstances. Managers of operations must have a comprehensive understanding of the many types of operations as well as their associated metrics and standards. In this paper, we'll look at how various aspects of operational capability stack up against one another. The primary objective of this research was to identify the most important characteristics of operational competency and to be able to compare them across distinct groups, such as industry, equipment type, and country of origin. The report also ranks how important each of these three groups is inside

manufacturing companies in industrialized countries. Our sample's important high-level classificatory qualities allowed us to divide it into four broad categories: intermediate goods, durable consumer goods (like autos), perishable consumer goods (like soda), and non-durable consumer goods.

Depending on the scale and nature of the company's operations, some skills will be more or less important. For medium and small enterprises, quality and timeliness of delivery are the most important factors in a rating. Businesses that seek out B2B and multi-channel customers place a premium on product quality. When it comes to business-to-consumer transactions, however, delivery is prioritized above product quality.

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## **5.2 Implications**

### **Theoretical implications**

This research provides support for the hypothesis that operational competencies are crucial to understanding industrial performance. The theoretical ramifications of this study take into consideration the market environment and how it impacts the relevance of operational capabilities and how the significance alters the characteristics of manufacturing enterprises. To begin, the operational capacity dimensions and the actual activities are dynamic in that they change over time and in response to changing market conditions.

### **Practical implications**

Our findings suggest that operational competence is becoming more important, in no little part due to the rapid evolution of the global information and communications technology sector. Additionally, while developing their long-term strategic objectives, manufacturers should consider their diverse operating capacity. However, some manufacturers may lack the resources or experience needed to deal with new technologies; thus, they must use a wide range of operational competencies to efficiently execute any prospective solutions and projects.

### **5.3 Limitations and further research**

The following considerations limit the scope of this thesis despite its systematic methodology. First, the energy category under the NACE classification was disregarded owing to a lack of data (n=1). This also applies to ETO in the context of production approaches (n=1). The scientific validity and generalizability would be compromised if these results were included.

The current state of quality's importance and its effects on business success were assessed using a survey. The findings demonstrated the significance of maintaining a high quality standard to an organization's productivity and success. More research is needed to better understand what makes it so timely. In addition, qualitative data and cost-benefit analyses of alternative environments are essential.

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## 7. Appendix

### Questionnaire

First Question: kindly select your department

Response options:

- Finance
- Information Technology
- Supply Chain Management
- Sales & Marketing
- Operation
- Quality Management
- Customer Services

Second Question: Talk about your management experience?

Response option:

Third Question: What is your management position?

Response options:

- First-line management
- Middle management
- Top management
- Senior

Fourth Question: How many employees in your company?

Response options:

- SM 50-249 employees
- Big over 250 employees

Fifth Question: Which kind of business do you work?

Response options:

- (B2B)
- (B2C)
- Mixed type