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|  | ИКОНОМИЧЕСКИ УНИВЕРСИТЕТ – ВАРНА  ФАКУЛТЕТ ИНФОРМАТИКА  КАТЕДРА ИНФОРМАТИКА |

**JJ**

**enhancing the supply chains in a manufacturing enterprise by employing cloud-based customer order management system**

**ДИСЕРТАЦИЯ**

за присъждане на образователна и научна степен „доктор” по докторска програма   
„Приложение на изчислителната техника в икономиката”

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# Intoduction

This study investigates the impact of cloud-based customer order management systems (COMS) on enhancing manufacturing organizations' enterprise resource planning (ERP) and supply chain management (SCM) capabilities. The use of cloud-based COMS emerges as a promising solution for the efficient, real-time, and adaptable administration of manufacturing companies' supply chains as they continue to pursue technological solutions. These systems can be integrated with enterprise resource planning systems to provide enhanced coordination, real-time monitoring, and efficient order management. Combining quantitative data from a survey of manufacturing companies with qualitative data from case studies, the research employed a mixed-methods approach. The results demonstrated a significant increase in the supply chain operations' efficiency, elasticity, and adaptability, particularly in order monitoring, inventory management, and demand forecasting. In addition, it was discovered that the integration of cloud-based COMS with ERP systems improved data visibility and decision-making processes. The study concludes that cloud-based COMS can be an effective instrument for manufacturing organizations seeking to optimize ERP and SCM capabilities. There are recommendations for future implementation and research. The findings have applications for manufacturing companies, software developers, and policymakers.

## Statement of the Problem

The success of manufacturing businesses is dependent on the efficient and effective administration of supply chains in a constantly changing business environment. The recent digital revolution presents unprecedented opportunities for supply chain integration and optimization. This study seeks to determine whether a cloud-based customer order management system has the potential to improve the supply chains of a manufacturing enterprise.When administering customer orders, the provision of information is the first area of emphasis. For order management, accurate, expeditious, and easily accessible data is crucial. However, current systems are frequently fragmented and incompatible. This situation restricts the scope of real-time analysis, prediction, and optimization, thereby impeding business performance and decision-making. Understanding the fundamentals of enterprise resource planning (ERP) systems and supply chain management (SCM), as well as their specific applications in a manufacturing company, will provide insight into their current limitations and latent potential.The transition towards digitization presents both opportunities and obstacles. With their ubiquitous availability, scalability, and cost-effectiveness, cloud-based systems have become an attractive option for administering complex business processes. However, the transition is not simple and presents obstacles such as data security concerns, the potential loss of control over business processes, and the complexity of reorganizing existing systems. Consequently, it is necessary to investigate the characteristics of cloud-based systems and the application of domain-driven design to manage business complexity.Lastly, manufacturing companies encounter unique challenges when it comes to managing customer orders. Due to the sensitivity and strategic value of order data, cybersecurity and data protection issues are of the utmost importance. In addition, the manufacturing industry confronts industry-specific challenges, including highly variable demand, production lead times, inventory management, and logistical coordination. The study will investigate these obstacles and how cloud-based order management systems can overcome them.In conclusion, the purpose of this study is to gain a deeper understanding of how a cloud-based customer order management system can improve the supply chain of a manufacturing company. It seeks to identify the advantages and disadvantages of implementing this technology and to provide practical recommendations for manufacturing firms seeking to innovate their supply chain and order management systems. The theoretical foundations of ERP, SCM, cloud computing, domain-driven design, and manufacturing operations management will guide the research. The findings may contribute to supply chain management, manufacturing, and information systems theory and practice.

Despite the increasing importance and reliance on supply chain management (SCM) and Enterprise Resource Planning (ERP) systems in the manufacturing sector, many organizations still grapple with significant challenges such as inefficiencies, lack of real-time visibility, limited scalability, and issues of integration with other business processes. These challenges often result in decreased productivity, increased operational costs, and inferior customer service. The advent of cloud technology presents a promising avenue to address these challenges. Cloud-based customer order management systems (COMS) are gaining recognition for their potential to enhance ERP and SCM capabilities by offering scalable, flexible, and real-time solutions. These systems have the potential to transform how orders are managed, from the time a customer submits an order, through the manufacturing process, to the delivery of the final product. They also offer the possibility of seamless integration with ERP systems, providing an efficient, all-encompassing solution for managing key business functions. However, despite the apparent potential of cloud-based COMS, their effectiveness in enhancing ERP and SCM capabilities within manufacturing organizations remains under-researched. There is a lack of empirical evidence on how these systems can be successfully implemented and integrated with existing ERP systems, and how they can contribute to improving supply chain processes and overall business performance. This research, therefore, aims to fill this gap in the literature, providing insights on the benefits and potential challenges of implementing cloud-based COMS in manufacturing organizations.

## Purpose of the Study

The purpose of this research is to explore the potential of cloud-based customer order management systems (COMS) to enhance Enterprise Resource Planning (ERP) and supply chain management (SCM) capabilities within manufacturing organizations.

Specifically, this study aims to:

Evaluate the effectiveness of cloud-based COMS in improving operational efficiency, enhancing real-time visibility, and providing scalability in the context of supply chain management.

Investigate the integration of cloud-based COMS with existing ERP systems and understand the potential benefits and challenges associated with this integration.

Examine how the implementation of cloud-based COMS influences key SCM processes such as order tracking, inventory management, demand forecasting, and customer service.

Provide insights on the role of cloud-based COMS in supporting decision-making processes within manufacturing organizations, particularly in the areas of supply chain management and resource planning.

Offer recommendations for manufacturing organizations considering the adoption of cloud-based COMS, as well as for developers designing these systems to ensure they meet the unique needs of this sector.

The ultimate goal is to contribute to the existing body of knowledge and provide actionable insights to manufacturing enterprises and technology providers to optimize the adoption and use of cloud-based COMS to achieve better ERP and SCM outcomes.

The primary objective of this study is to investigate how a cloud-based customer order management system can improve supply chains in a manufacturing enterprise. With the ever-increasing complexity of managing customer orders and the rapid advancement of technology, it is essential to comprehend how modern enterprises can transform their supply chain operations by leveraging cloud technology. The investigation attempts to accomplish the following aims:Assess the advantages and disadvantages of providing information when administering customer orders. This entails a comprehensive examination of the conceptual framework of enterprise resource planning (ERP) and supply chain management (SCM), with an emphasis on order and supply chain management particulars in a manufacturing company. In addition, the fundamentals and characteristics of ERP systems will be analyzed to determine their potential for enhancing supply chain operations.Analyze the opportunities and challenges presented by the digitization of management processes using cloud technologies. This necessitates an analysis of the characteristics of cloud-based systems, such as their adaptability, scalability, and security. The study will also investigate how domain-driven design can be utilized to address business complexity, thereby enhancing knowledge of how digital transformation can optimize manufacturing operations.Analyze the advantages and disadvantages of administering customer orders in a manufacturing company. This involves analyzing cybersecurity and data protection issues that arise in the context of cloud computing and digital information exchange. In addition to identifying and analyzing the specific challenges that manufacturing organizations face, such as fluctuating demand, production scheduling, inventory management, and logistical coordination, the study will also identify and analyze the specific obstacles that manufacturing organizations face.In addition to the aforementioned, the study will aim to provide practical recommendations and solutions to help manufacturing enterprises surmount the identified obstacles. This research aims not only to contribute to academic knowledge in the disciplines of supply chain management, cloud computing, and manufacturing but also to provide practitioners seeking to optimize their operations and enhance their market competitiveness with valuable insights.

## Research Objectives (Questions/Hypotheses)

Research Objectives:

To evaluate the impact of cloud-based customer order management systems (COMS) on the efficiency of supply chain management (SCM) in a manufacturing organization.

To explore how cloud-based COMS can enhance the functionalities of Enterprise Resource Planning (ERP) systems.

To investigate the challenges faced by manufacturing organizations during the integration of cloud-based COMS with existing ERP and SCM systems.

To understand the potential of cloud-based COMS in improving real-time order tracking, inventory management, and demand forecasting.

To assess the role of cloud-based COMS in decision-making processes related to SCM and ERP.

Research Questions:

How does the implementation of cloud-based COMS affect the efficiency of SCM in a manufacturing organization?

In what ways can cloud-based COMS enhance the functionalities of ERP systems in a manufacturing context?

What challenges do manufacturing organizations face during the integration of cloud-based COMS with existing ERP and SCM systems?

How can cloud-based COMS improve real-time order tracking, inventory management, and demand forecasting in manufacturing organizations?

What role does cloud-based COMS play in decision-making processes related to SCM and ERP?

Research Hypotheses:

H1: The implementation of cloud-based COMS significantly improves the efficiency of SCM in a manufacturing organization.

H2: The use of cloud-based COMS enhances the functionalities of ERP systems within a manufacturing context.

H3: Manufacturing organizations face significant challenges during the integration of cloud-based COMS with existing ERP and SCM systems.

H4: The adoption of cloud-based COMS can significantly improve real-time order tracking, inventory management, and demand forecasting in manufacturing organizations.

H5: Cloud-based COMS plays a significant role in decision-making processes related to SCM and ERP.

This study aims to understand the impact of implementing a cloud-based customer order management system on the supply chain of a manufacturing enterprise. To meet this goal, the following research objectives have been established:

Investigate the role of ERP and SCM in managing customer orders within a manufacturing company:

1.1. Understand the specifics of order and supply chain management in a manufacturing company.

1.2. Analyze the characteristics and fundamentals of enterprise resource planning systems in such a context.

Research Questions for Objective 1:

Q1. How does the current ERP and SCM system handle the complexities of order and supply chain management in a manufacturing company?

Q2. What are the fundamental characteristics of ERP systems that affect their efficacy in a manufacturing enterprise?

Examine the potential opportunities and challenges of digitizing the management process using cloud technologies:

2.1. Evaluate the characteristics of cloud-based systems relevant to supply chain operations.

2.2. Assess the feasibility and impact of using domain-driven design to tackle business complexity.

Research Questions for Objective 2:

Q3. What are the unique characteristics of cloud-based systems that can be leveraged for improving supply chain operations?

Q4. How can domain-driven design help tackle the complexity of digitizing the management process?

Explore the opportunities and challenges in managing customer orders within a manufacturing company with a cloud-based system:

3.1. Identify cybersecurity and data protection concerns specific to the manufacturing industry.

3.2. Understand the unique challenges that manufacturing organizations face and how a cloud-based system might address them.

Research Questions for Objective 3:

Q5. What are the potential cybersecurity and data protection issues arising from implementing a cloud-based customer order management system?

Q6. What are the specific challenges faced by manufacturing organizations in managing customer orders and how could a cloud-based system help overcome these?

Research Hypotheses:

H1: Implementing a cloud-based customer order management system can significantly enhance the supply chain efficiency in a manufacturing enterprise.

H2: The benefits of digitizing the management process using cloud technologies outweigh the potential challenges and risks in a manufacturing setting.

H3: Domain-driven design effectively addresses the complexity associated with the digitization of the supply chain and customer order management process.

## Significance of the Study

The adoption of cloud-based customer order management systems (COMS) has the potential to significantly improve operations within manufacturing organizations, particularly in the areas of Enterprise Resource Planning (ERP) and supply chain management (SCM). Yet, empirical studies exploring this potential and offering practical guidance are still scarce. Thus, this research aims to bridge this gap, and its significance lies in multiple dimensions:

Academic Contribution: This study enriches the body of knowledge around the application of cloud technologies in the manufacturing sector. It extends existing literature on ERP and SCM by integrating the concept of cloud-based COMS and offers insights into the benefits and challenges of this integration.

Practical Implications for Industry: The research findings can guide manufacturing organizations in their decision-making processes regarding the adoption of cloud-based COMS. It can provide them with a better understanding of how these systems can enhance ERP and SCM capabilities, improve operational efficiency, and address common challenges in these areas.

Implications for Technology Providers: The insights from this study can help technology providers (COMS, ERP, and SCM solution providers) better understand the needs and challenges of manufacturing organizations. It can guide them in improving their systems, ensuring they are user-friendly, and can be seamlessly integrated with other business systems.

Policy Implications: The study may also influence policy-making, particularly in encouraging the adoption of digital solutions in manufacturing. It provides empirical evidence on the benefits of cloud-based technologies, which can be used by policymakers to support the digital transformation of the industry.

Future Research: By highlighting the impacts and challenges of implementing cloud-based COMS in manufacturing organizations, this study opens new avenues for future research. These may include exploring the factors influencing the successful implementation of such systems, their long-term impacts, or the role of factors such as organizational culture and employee training in their effective use.

The findings of this study have the potential to contribute significantly to both theory and practice in the context of manufacturing, ERP, SCM, and information technology. (3 бр.).

This study examines the role of cloud-based customer order management systems in enhancing manufacturing operations, which is of great significance in the rapidly evolving field of manufacturing supply chain management. This study's significance can be regarded from numerous perspectives:Academic Significance: This study will contribute to the literature on manufacturing environments, supply chain management, ERP, cloud computing, domain-driven design, and cybersecurity. It is anticipated that the study will provide valuable insights into the applications, challenges, and benefits of deploying cloud-based systems for order management, thereby enriching academic discourse in these areas.Importance to Industry: This study will provide a comprehensive analysis of implementing a cloud-based customer order management system for manufacturing companies seeking to improve their supply chain efficiency. By analyzing opportunities and obstacles, as well as delineating specific issues such as cybersecurity, the research will provide actionable and applicable insights that can inform the decision-making processes of these organizations.Importance of Technology: As the technological landscape continues to evolve at a rapid pace, it is crucial to comprehend the impact of newer technologies on traditional business processes. This study will contribute to the field of digital transformation by shedding light on how cloud-based systems and domain-driven design can revolutionize the way manufacturing enterprises manage their supply chains and order management.By examining the data protection and cybersecurity issues associated with cloud-based customer order management systems, this study can contribute to policy-making efforts. Utilizing the findings of this study, policymakers can develop regulatory frameworks that guarantee the secure and responsible use of cloud technologies in the manufacturing sector.The findings of this research could be of use to a diverse range of parties, including academics, industry professionals, technology developers, and policymakers. In the domain of digital transformation in manufacturing and supply chain management, this study could serve as a basis for future research and exploration.

## Research Design

The research will combine quantitative and qualitative data to provide a comprehensive analysis of the research objectives. This design will facilitate a more nuanced understanding of the topic by integrating statistical data with contextually rich insights.Literature Review: The study will commence with a thorough review of the existing literature on ERP and SCM, the characteristics of cloud-based systems, domain-driven design, and the difficulties of managing customer orders. The literature review will assist in contextualizing the research and defining its theoretical foundation.Quantitative Research: The research will administer a survey to manufacturing supply chain managers and IT professionals who have implemented or are contemplating implementing cloud-based customer order management systems. The survey will collect information regarding the respondents' experiences, perceived benefits, encountered challenges, and overall satisfaction. This information will be statistically analyzed to identify patterns, correlations, and noteworthy findings.To conduct qualitative research, in-depth interviews will be conducted with survey respondents with practical experience implementing such systems. The interviews will capture rich details that quantitative data may not reveal. Specifics of order and supply chain management in manufacturing companies, opportunities and challenges of digitization utilizing cloud technologies, as well as data protection and cybersecurity concerns, will be discussed.The study will also include an examination of one or more manufacturing companies that have implemented cloud-based customer order management systems successfully. The analysis of the case study will provide real-world examples of how such systems can improve supply chains and the potential implementation challenges.Analyse des données: The survey, interview, and case study data will be analyzed systematically using appropriate statistical and thematic analysis techniques. The quantitative data will be analyzed using statistical software to identify patterns and verify hypotheses, whereas the qualitative data will be analyzed thematically to identify central themes, patterns, and insights.Synthesis and Recommendations: Finally, the study will provide a comprehensive understanding of the topic by synthesizing all the findings. The research will conclude with a set of actionable suggestions for manufacturing companies contemplating the adoption of cloud-based customer order management systems.The mixed-methods approach of this research, as well as the thoroughness of each step, will ensure the reliability and validity of the study, thereby providing robust and comprehensive insights into the enhancement of supply chains in a manufacturing enterprise through the use of a cloud-based customer order management system.

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The proposed research adopts a mixed-methods approach, integrating both quantitative and qualitative research methods to provide a comprehensive understanding of the topic. The mixed-methods approach allows for the triangulation of data, which strengthens the validity and reliability of the research findings.

Quantitative Research: A survey will be used as the primary quantitative research method. The target population for the survey will be managers and executives in manufacturing organizations who have implemented or are planning to implement cloud-based customer order management systems (COMS). The survey will collect data on various metrics related to ERP and SCM performance before and after the implementation of cloud-based COMS. Statistical analysis will be performed on the collected data to answer the research questions and test the hypotheses.

Qualitative Research: The qualitative component of the research will involve conducting case studies of selected manufacturing organizations that have implemented cloud-based COMS. Data will be collected through interviews with key stakeholders, observation, and document analysis. The case studies will provide an in-depth understanding of the implementation process, the challenges encountered, the strategies used to overcome these challenges, and the perceived impacts on ERP and SCM capabilities.

The mixed-methods approach will provide a more holistic understanding of the research topic. The quantitative data will provide generalizable results and statistical evidence on the impacts of cloud-based COMS on ERP and SCM capabilities, while the qualitative data will provide rich, contextual insights into the practical aspects of implementing such systems in manufacturing organizations.

This research design is flexible and can be modified based on practical considerations such as resource availability and the accessibility of the target population. The design also takes into account ethical considerations to ensure the research is conducted in a manner that respects the rights and privacy of the participants.

## Study Organization

The research will be organized into several key stages, each designed to systematically investigate the impact of cloud-based customer order management systems (COMS) on enhancing Enterprise Resource Planning (ERP) and supply chain management (SCM) capabilities within manufacturing organizations.

Literature Review and Theoretical Framework Development: The first stage of the research will involve an extensive review of existing literature on ERP, SCM, cloud-based systems, and COMS, as well as their applications in the manufacturing industry. This review will help to identify gaps in current knowledge and develop a robust theoretical framework for the study.

Research Design and Instrument Development: Once the theoretical framework is established, the next stage will involve developing the research design, including the quantitative survey and qualitative interview guides. The instruments will be pilot tested and refined as necessary to ensure they effectively capture the needed data.

Data Collection: The data collection stage will involve distributing the survey to the target population and conducting the case study interviews. Efforts will be made to ensure a diverse range of participants to increase the generalizability of the findings.

Data Analysis: The collected data will be systematically analyzed. Quantitative data will be statistically analyzed using appropriate software, while qualitative data will be analyzed using content analysis to identify key themes and patterns.

Findings and Discussion: The results of the data analysis will be presented in a clear and organized manner. The findings will be discussed in relation to the research questions, existing literature, and the theoretical framework.

Conclusion and Recommendations: The final stage will involve drawing conclusions based on the findings and making recommendations for manufacturing organizations, technology providers, and future research.

Throughout each stage of the research, ethical considerations will be given priority to ensure the study is conducted in a manner that respects the rights, confidentiality, and privacy of the participants. Regular progress reports will be made to monitor the research's progress and make necessary adjustments to the plan.

This study's organization ensures a systematic and rigorous approach to exploring the research question, thereby enhancing the validity and reliability of the findings.

# 2. Challenges of Information Provision in Managing Customer Orders within Supply Chains and ERP in Manufacturing Enterprises Using Cloud-Based Systems

Incorporating cloud-based systems into the administration of customer orders has altered the operational dynamics of manufacturing organizations. These systems are bridging the divide between supply chain and enterprise resource planning (ERP) functions, allowing for seamless order monitoring, data accessibility, and enhanced customer service. Nevertheless, this digital transformation is not devoid of obstacles, especially in the domain of information provision.

## 1.1. Conceptual Framework of ERP and Supply Chain Management

Logistics -> supply chain -> customer service

[Fundamentals of Logistics, Supply Chain & Customer Service (udemy.com)](https://heidelbergmaterials.udemy.com/course/build-award-winning-customer-service/learn/lecture/15668422#overview)

Popular topics -> Supply Chain /

Inventory Management

Warehouse Management

Logistics Management

Python

Supply Chain Analytics

SAP SD

Procurement

Customer Service

Inventory Control

Risk Management

Strategic Planning

### 1.1.1. Order Management

The management process involves prospecting a potential client, conducting financial diligence, assessing credit, credibility, and credit score, negotiating with the client and US team, and finalizing a contract. Order management consists of opportunity credit rating, credit score, and contract. Legal teams may be involved in drafting the contract.

Opportunity occurs through discussions and negotiations with prospective clients, including through affiliates, websites, and marketing. Business partners handle proposals, negotiate terms, and finalize contracts. Leasing is calculated based on monthly recurring revenue and one-time fees. Master setups are covered in subsequent sessions.

Contracts are formal agreements containing terms and conditions for business engagement between parties. They cover payment terms, intellectual property, and limited liability. In disputes, the terms and MSE prevail. Purchase orders are sales documents with specific details. Contracts exist for purchase of goods, effort, fixed price, and transaction-based contracts. Significant clauses include fees, reimbursements, termination levels, penalties, quality of deliverables, dispute handling, service levels, uptime, audits, warranty retention, and insurance.

### 1.1.1. Specifics of order and supply chain management in a manufacturing company

The job of a Supply Chain is to

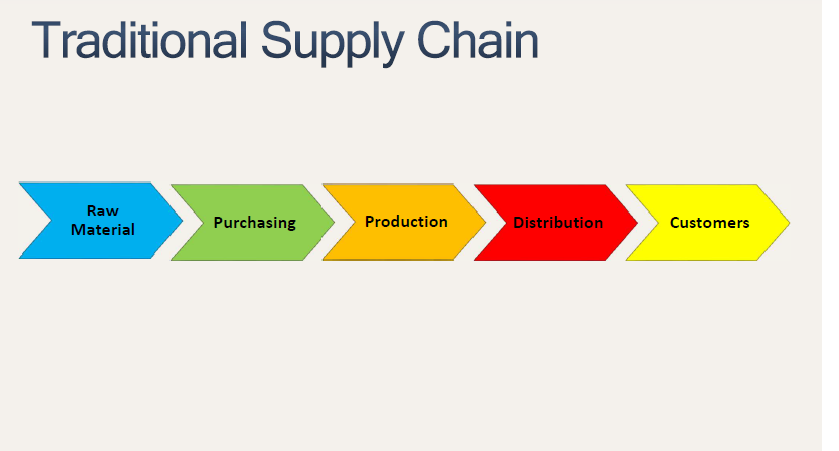
get the “right product, to the

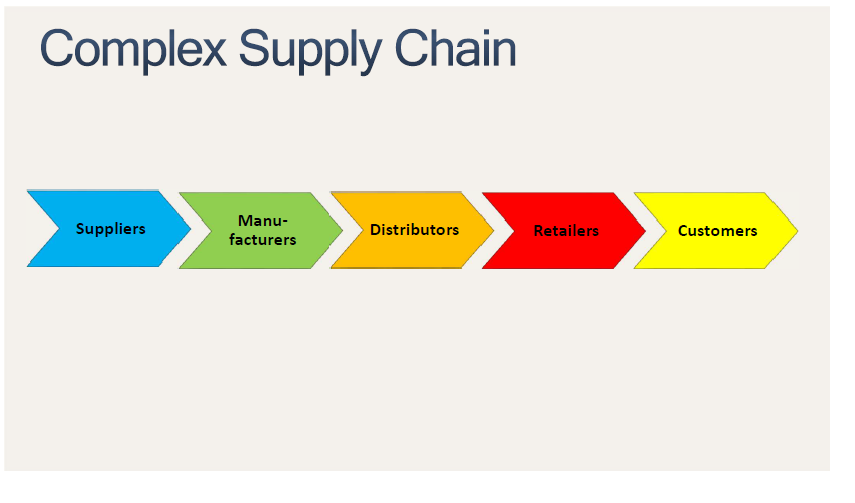
right customer, at the right time,

at the right place, in the right

quantity, in the right condition

and at the right cost.”.





Demand:

Refers to the need for a particular

item, product, component or

service.

Types of Demand

* Independent
* Dependent

Understanding the behavior of

demand becomes a step in being able

to predict it.

• Trend

• Random Fluctuations

• Seasonal Fluctuations

• Cyclical

Forcasting technologies:

• Moving Average

• Weighted Average

• Exponential Smoothing

• Naive

• Expert Opinion

• Management Estimate

• Focus Group

• Survey

QUANTITATIVE vs. QUALITATIVE

Forecasting error

Managing the accuracy of a

forecast requires minimizing the

errors between the actual demand

and the forecasted demand.

• Cumulative Sum of Error

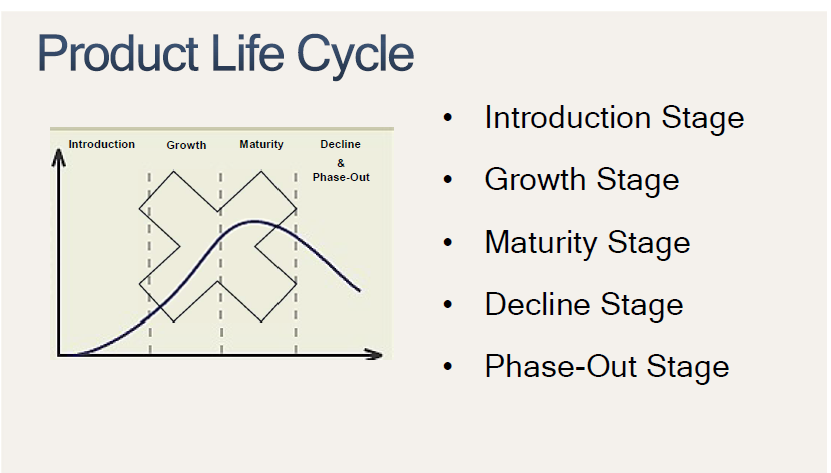
• Mean Square Root

• Mean Absolute Deviation

• Mean Absolute Percent Error

Manufacturing:

Manufacturing is the conversion of raw materials into a finished product, with the main goal of creating value for producers and customers. This process incurs costs of materials, labor, and overhead, resulting in profit. Manufacturing is an essential part of any society's economy, and efficiently producing goods and services improves the standard of living. There are various manufacturing environments, such as ITO engineered to order, MTO manufacture to order, ATL Assemble to order, and MTS manufacturer to stock. Each strategy has its own advantages and disadvantages, but all aim to create value for both the customer and the company. By implementing these strategies, companies can improve the quality and delivery of their products, ultimately benefiting both the customer and the company.



The product life cycle is a bell-shaped curve with five stages: introduction, growth, maturity, decline, and phase out. The introduction stage involves high advertising and promotions, high design and manufacturing costs, and high prices. The product moves into the growth stage, where production increases and costs decrease due to higher manufacturing volumes. Competition begins as others replicate their versions, leading to competing items. The maturity stage is when the product is well established and well-established.

The decline stage occurs when sales decline and profits decrease, and manufacturers introduce variations to stimulate demand and lower costs. The phase out stage occurs when production ends, and support may continue or be outsourced. The timeline of the lifecycle varies depending on the product, consumer needs, and the availability of newer innovations. As manufacturers, it is crucial to understand where products exist on the curve and make decisions accordingly. Ideally, a company should have products evenly spread across all stages, with product introduction being an ongoing activity to drive future growth. Maximizing mature products to increase profits and recognizing decline products to make decisions on when to phase them out.

choosing the manufacturing environment

• Project

• Intermittent

• Cell

• Product

• Linear or Repetitive

• Continuous

When selecting a manufacturing environment, there are several layouts that support the environment. The project layout is a fixed position layout used for large, complex products that are manufactured on-site, using unique tasks and a steady flow of materials. This layout is associated with an engineer to order (ITO) environment, while the intermittent layout is a functional layout that groups similar equipment in work centers. This layout is used by manufacturing companies that produce various products in low to medium volumes, with equipment that can be used for multiple products.

The cell layout is a linear flow layout where equipment and workers are arranged in a linear flow, with each cell having its own dedicated equipment and workers. This layout is mainly used for MTO manufactured to order or ATL assembled to order environments. The product layout is a flow layout, dealing with products moving through equipment at a constant rate and high volume. There are two types of flow layouts: linear or repetitive flow layout, which is specialized for a specific product and involves high investment and upfront financial commitment, and continuous flow layout, which is used for liquids, powders, and chemicals. These layouts are essential for manufacturing products moving at high volumes and require significant investment and upfront financial commitment.

a customer's need

• Cost

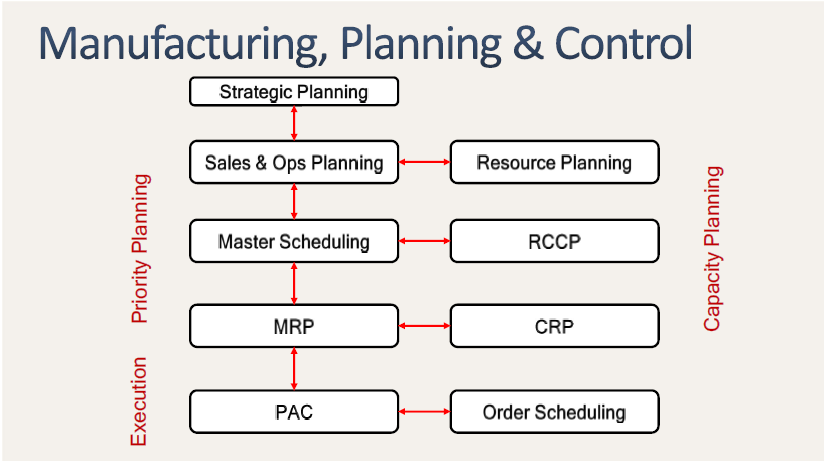
• Quality

• Speed

• Dependability

• Flexibility

In today's competitive world, customer expectations are high, and manufacturing plans should focus on meeting or exceeding these expectations. These expectations can be summarized as cost, quality, speed, dependability, and flexibility. Customers seek value in their products or services, and these expectations can be summarized as cost, dependent city, and flexibility. These performance objectives are considered order winners, causing customers to choose your product over competitors. Achieving excellence in one or more of these characteristics is a competitive advantage, and a company must decide where it wants to be in the market.



Sales and operations planning is a crucial aspect of a company's strategic planning, which outlines the products, customers, and markets it will manufacture for the next 3 to 5 years. This planning stage involves developing a production plan, setting a production rate, and establishing the overall level of manufacturing output at the product family level. Resource requirements planning checks the resources needed to support the production plan, determining the need for long-lead resources such as hiring people, buying new machines, and expanding facilities. The master scheduling stage feeds data into the master production schedule (NPS), which breaks down data at the product family level to the end item level. The rough cut capacity planning (R CCP) checks the resources needed to support the master production schedule, determining the need for capacity at the end item level. The MP is created at the master scheduling stage and feeds data into material requirements planning (MRP), which bridges the NPS and production activities on the shop floor.

Capacity requirements planning checks the feasibility of the material requirements plan, determining the amount of labor and equipment needed to support production requirements. The execution stage, production activity control or pack, executes the master production schedule and material requirements plan, ensuring optimal resource use and customer service.

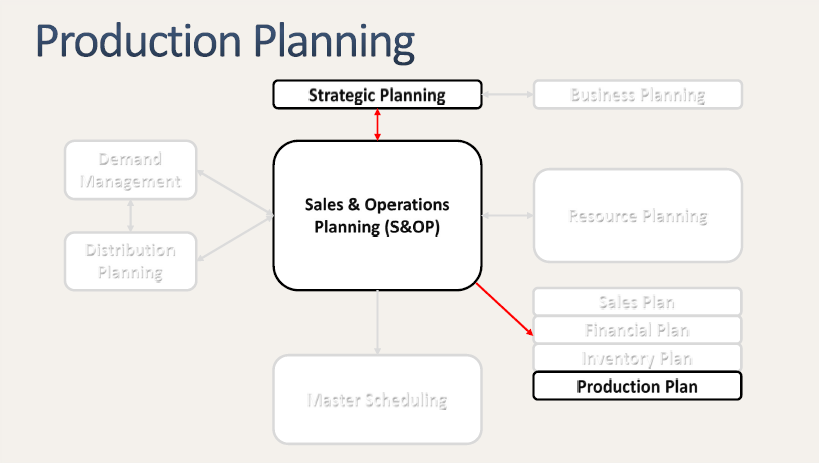
Product planning:

Is a process in a manufacturing business

that establishes a production rate,

typically monthly, for a family of parts

over a 12 to 36 month planning horizon.



Resourse requriment planning:

• Is a check on resources needed to

support the Production Plan.

• Deals with capacity at the product

family level and determines the need

for long-lead resources.

#### best practices

Manage Risk

In a supply chain, managing your risk is crucial for achieving business objectives. Risks can come in various forms, such as late delivery dates, quality issues, hazards, dangers, or lawsuits. To prevent and prepare for unknown risks, identify all known and internal risks, create a risk register, assess each risk, assign a probability of its occurrence and impact, and determine the priority of each risk. Add the probability, impact, and risk rating to the risk register against each risk. Develop a risk response plan, assigning an owner and ensuring approval and funding for the response.

Monitor the response plan and update it as needed. Ideally, eliminate all risks that may not always be possible, and minimize their impact if possible. By taking these steps, you can protect your supply chain and ensure smooth operations.

Accreditations & Certifications

[Supply Chain: Planning of Resources & Detailed Scheduling (udemy.com)](https://heidelbergmaterials.udemy.com/course/supply-chain-planning-of-resources-detailed-scheduling/learn/lecture/7900542#overview)

Maintaining a certification and adhering to industry-recognized standards, such as **ISO**, can establish credibility and set a company apart from competitors. These standards cover various industries, including quality, environment, social responsibility, and risk. Displaying certifications on websites and vehicles can provide a competitive advantage.

Supply Chain Metrics

Metrics are crucial for measuring performance and making improvements. There are three categories: customer-focused, financial, and operational. Customer-focused metrics focus on delivering a perfect order, speed of performance, and flexibility. Financial metrics, such as profit cost and inventory, help control costs and drive cost reductions. Operational metrics measure day-to-day operations, including quality, productivity, and asset management.

Quality metrics track manufacturing defects, returns, warranty issues, and paperwork accuracy. Productivity metrics measure output versus input, and asset management metrics measure inventory usage. Obsolete inventory can be managed by reviewing ordering or purchasing policies and making necessary changes.

Continuous improvement

Continuous improvement involves continuous efforts to improve processes and products, leading to improved customer satisfaction and long-term success. Companies invest in ongoing improvements, with potential savings outweighing costs. Benchmarking, competitive or best in class, helps set goals and targets.

Winner strategy

Order winners are characteristics that attract customers, offering affordability, quality, and speed. To excel, businesses can employ lean or agile strategies, focusing on efficiency and flexibility. Balancing these expectations is crucial, as competition may also be focusing on similar aspects.

[Supply Chain Fundamentals : Logistic & Transportation (udemy.com)](https://heidelbergmaterials.udemy.com/course/supply-chain-fundamentals-logistic-transport/learn/lecture/21257648#overview)

### Logistics

The order fulfillment process involves several steps, including checking inventory, processing the order, preparing paperwork, and delivering the order. This process impacts various business functions, including accounting, warehouse, transportation, production, and finance. To ensure smooth order fulfillment, business owners and managers should order what they need, know the seller, suppliers, and plan ahead. Rush orders can be more expensive and cause more headaches, so it's important to understand their process. Studying alternatives to current suppliers, considering the environment, and planning ahead can help minimize inventory holding costs.

Good relationships with suppliers and buyers are crucial for overall success. A perfect order is the right item delivered to the right place at the right time. To achieve this, sellers must have a series of rights, including high quality, reliability, and timely delivery. These rights include manufacturing within specifications, picking the right item from the warehouse, packaging it properly, and ensuring all delivery instructions are correct. Sellers must manage various aspects of their business, such as productivity software and automation, to ensure accuracy and timely delivery.

Cycle time, the time from order placement to customer receipt, measures responsiveness and costs. By balancing order fulfillment, cycle time, and management costs, sellers can attract customers and increase their sales. By implementing these concepts, sellers can become best in class in the business world.

Logistics management is crucial for businesses, as it involves sourcing, manufacturing, and delivering products to customers. It involves understanding customer demand, planning effective business strategies, managing inventory and transportation processes, and providing efficient support services. Logistics is closely intertwined with marketing, as product attributes such as size, shape, weight, and packaging impact storage and transportation costs. In today's global economy, logistics is increasingly important for business success, with companies seeking the best suppliers and markets for their products. To ensure success, companies must carefully manage their logistics operations, set specific goals, and communicate with marketing departments to ensure smooth material flow.

Logistics is a crucial aspect of supply chain management that involves planning, implementing, and controlling the efficient forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption. It involves how businesses conduct their business, sourcing from suppliers, making products or providing services, and delivering those products and services to customers. Logistics moves goods and services from the beginning of the supply chain to the end, transporting supplies and materials from the supplier to the factory and moving finished goods from the factory to the customer.

Logisticians plan and manage these activities in advance, ensuring that materials or products are stored temporarily. They also manage inventory levels and make effective use of information technologies to meet business plans and customers' expectations consistently. A good logistics program must ensure that businesses are doing the right things to meet their business goals and create customers who want to do business with them.

Outsourcing specific aspects of logistics, such as delivery or international distribution, can help ensure that the right person is performing the activity. Being efficient and effective drives logistics success, and understanding these activities makes it easier to manage them. For example, Amazon outsources the delivery function to UPS for two reasons: it is an expert at the delivery function and gives Amazon peace of mind that their package will be delivered properly.

Logistics and supply chain are closely related, as today's supply chains are driven by customer orders. A supply chain is a demand-driven supply network, with goods and services produced and moved based on customer demand. To ensure the success of the supply chain, logistics involves the movement, storage, and distribution of products and services. Consistently filling a customer's order effectively and efficiently is crucial for building a business reputation.

To meet customers' expectations, logistics management integrates six activities: transportation management, warehouse management, distribution center management, and inventory control. Transportation management ensures inventory is moved efficiently throughout the supply chain, while warehouse management ensures inventory is in the right place at the right time. Distribution center management ensures proper inventory filling, using cutting-edge equipment and software technologies. Inventory control is the last of the six activities that must be integrated effectively within the supply chain.

In summary, logistics activities are essential for a successful supply chain, with transportation being a key component. By integrating these activities, organizations can ensure timely order delivery and maintain a strong customer reputation.

Insufficient facts always invite danger in the logistics world, as seen in the case of the grocery store experiencing a sudden spike in sales. This sudden demand can cause confusion and a bullwhip effect, where the supply chain is unsure what to do with the inventory. This phenomenon occurs when the supply chain is distorted by the further away from the customer, leading to a massive movement at the end of the whip. To prevent this bullwhip effect, it is essential to share information and coordinate efforts throughout the logistics network and supply chain. A good practice is collaborative planning, forecasting, and replenishment (CPFR), which involves retailers, wholesalers, and manufacturers working together to understand and react to changes in customer demand.

The internet assists in collaboration and coordination, and short channel lengths also aid coordination and communication efforts. Trust is a major obstacle to CPFR, but it can be applied with key partners who have a vested interest in optimizing the entire logistics channel.

Logistics is a crucial aspect of an organization's operations, as it involves managing and filling customers' orders across various business functions. It is essential to understand how logistics interacts with other roles within the organization, such as marketing, manufacturing, purchasing, and finance. Marketing professionals work closely with the marketing department to align quantity discounts with full truckloads, product, promotion, place, and purchasing.

Logistics also plays a role in manufacturing, where proper quantities of raw materials and components must be delivered to the factory at the right time to produce the products. This coordination helps reduce overall logistics costs. The purchasing function also plays a significant role in logistics, as it influences inventory levels before, at, and after the factory.

Finance is an increasingly important area for logistics, as it impacts return on investment and return on net assets measurements. Logistics managers should drive the coordination effort, ensuring that logistics efforts are coordinated with marketing, operations, purchasing, and finance.

The Greatest Management Principle suggests that what gets rewarded gets done, but this principle can be the most challenging obstacle to coordination within the logistics network and supply chain. Logistics managers must be rewarded for reducing overall costs, not just the cost of their specific area. Additionally, lack of information sharing can hinder effective coordination. By understanding the interplay between logistics, marketing, operations, purchasing, and finance, logistics managers can ensure a smoother and more efficient organization. Coordinating goals and incentives for all members of your logistics network and supply chain is crucial for managing your business as an integrated system.

Cost savings sharing is a key ingredient in optimizing your supply chain, as it allows you to gain additional revenues without excessive costs and potentially increase sales. Assessing performance measurements and communication of inventory levels is essential for effective coordination practices and logistic systems.

Customers prefer easy-to-do business with companies that make the purchasing process easy and allow for easy returns. Companies are increasingly adopting more liberal return policies, transferring the risk of the purchase from the customer to themselves. This has led to increased sales and satisfied repeat customers. As more goods move backwards through the logistics network, it is crucial for logistics professionals to control the returns management process. There are several ways to accomplish this, including avoidance, gatekeeping, outsourcing, and zero returns policies.

Controlling costs is also important, as more efficient returns management systems can generate more value from reselling, remanufacturing, and refurbishing. Activity-based costing is an effective tool for realizing value from returns management processes.

International logistics is challenging to manage, with factors such as longer lead times, volatile fuel prices, and port congestion. In 2008, major companies began to adopt regional supply chains, which reduce transportation costs, increase reliability, and build the economy of the region. Regional supply chains help manufacturers build new customers and increase sales, especially for household goods. However, this new customer market was not noticed by the executive suite. Logistics is closely connected to a company's business strategy, as it helps ensure continued growth by providing excellent service to repeat customers.

A strong logistics capability helps ensure continued growth by providing excellent service to happy repeat customers. A flexible logistics system allows a company to switch its emphasis as business conditions change. Zara, a Spanish company, is an example of a nimble and responsive logistics network. Companies like Walmart maintain efficient distribution networks and additional transportation capabilities to respond to unexpected increases in customer demand. Being flexible is essential for adapting to market changes and evolving customer preferences. To be nimble, responsive, and flexible, logistics must be closely aligned with the overall corporate strategy.

## 1.2. SAP SD

Inquiry

In this lesson, we will discuss the sales order cycle, a business process that involves various departments interacting with vendors and ensuring timely delivery of goods. The sales cycle is best understood as a business-to-business scenario, where a company like HP or Dell sells computers to a customer like Walmart. The sales cycle starts with an inquiry, where the customer sends an RFI (Request for Information) to HP, Dell, or Gateway, asking for specific products and prices. HP creates a record in the system, which is then used to generate a unique reference number, which is used in future communication with the customer. This unique number serves as a reference for future communication with the customer.

The lesson highlights the importance of understanding the sales order cycle and its variations, such as the use of SAP and the importance of addressing disputes between the seller and buyer. By implementing SAP and addressing the needs of the customer, businesses can effectively manage their sales and customer relationships, ultimately leading to better customer experiences and increased efficiency.

In this text, Wal-Mart decides whether they want to proceed with an inquiry or a formal quote. An inquiry is informal, requiring HP to adhere to terms and conditions, while a quotation is more formal and has a set of days within which it is valid. The difference between an inquiry and a quotation is that an inquiry is informal, without terms or promises, and has a set of days within which it is valid. The difference between an inquiry and a quotation is discussed in the next chapter, where it is created in SAP.

In the previous chapters, an inquiry was created by HB and sent to Wal-Mart. The system created a quotation with reference to the inquiry, which was later sent to the company. The customer initially placed a pre-sales order, which was not a promise to buy. However, if the customer chooses to buy, they place a purchase order, which is a sales order. The system generates an order number, which is then sent to the customer, confirming the order.

The key words in this context are purchase order and sales order. The next chapter will discuss creating a sales order in the system with reference to a previously created quotation and generating a sales order.

The text discusses the process of delivering physical goods to logistics, specifically the L.F. document type. The delivery process involves copying down from an order and ensuring that the delivery date is the confirmed date. The delivery process comprises three key pieces: car picking, Backing the race PGI (post goods), and BGA. The main subprocesses in the delivery process are picking, packing, and BGA. The delivery process ensures that the goods are delivered within the specified timeframe and quantities.

#### Make to Order

Make to order (MPO) is a common method used in manufacturing goods, such as assembling or engineering to order. In MPO, the demand for a specific product is generated, and the system checks if the stock is available. If the stock is not available, the system generates demand, which is then accumulated and processed. If the stock is not available, the system generates a plan to produce the car, which is then converted to a production order. The production order is executed in the plant, and when the stock is ready, the production order is applied to the stock. The stock is then ready for delivery, and the customer is informed of the availability of the car.

MPO is a make to stop process, as it does not have a hard locking between the order and the stock. Instead, it can be reassigned to another customer for another order. This is done through back order processing or rescheduling, which allows the stock to be resold to another customer. At least 250,000 cars are standard versions, with demand planning estimating the best version in Silver Color. This planning process is not based on a regular route, but rather on the demand planning tool itself.

If a special version is selected, it is manufactured for the individual, ensuring that the car is specifically manufactured for the individual. This process is not based on a single sales order or planning.

The text discusses the concept of make the stock (M-2) and make to order (M-3) scenarios. M-2 is a scenario where a customer orders a customized model, which is not available in stock or not intended for manufacturing. The system generates a planned order, which is converted into a production order. The production order goes to the plant, and the plant creates the car, which is made available for delivery. The difference between M-0 and M-2 is that M-0 involves tagging stock, allowing a specific order demand to be met with the production order or stock.

## Customer service

#### customer service strategy

Customer service strategy is a plan of action designed to achieve a long-term or overall aim, distinct from vision. It is essential for organizations to have a clear vision and strategy in place to guide decisions and actions. The term has evolved over time, with various interpretations, such as those referring to tactics or goals. In many organizations, there is an overall corporate strategy, strategies within specific divisions or business units, and sometimes strategies even at the team level.

Customer service strategies should reflect and support the organization's overall vision strategy, but be specific enough to guide developments and decisions around customer service. For example, Walt Disney's service vision in the 1950s was to create happiness through safety, courtesy, show, and efficiency. Disney's strategy focuses on key actions and behaviors that support each action, bringing vision and strategy to life through the actions of every employee.

Customer service strategies are different from one organization to another, but they serve as a bridge between the organization's vision and mission and the daily decisions and actions.

An effective customer service strategy is crucial due to the rapidly evolving customer expectations and the high stakes involved in sharing positive experiences. Companies like Trader Joe's, MOO.com, and Starbucks see up to 70% of new customers coming through referrals.

An effective strategy not only creates value but also enables organizations to optimize efficiency, customer loyalty, and strategic value. By leveraging the strategic value of customer service, organizations can improve and innovate in various areas of their operations.

An effective customer service strategy ensures that decisions made by the team are aligned and not swayed by various factors. Without a clear and effective strategy, customers and problems may not receive the attention they deserve, but other issues are equally important.

In conclusion, an effective customer service strategy is essential for organizations to focus on delivering on their mission and promise while engaging with customers effectively.

#### Expectations

Understanding customer expectations is crucial for building an effective customer service strategy. The International Customer Management Institute (ICMI) has identified 10 expectations of service interactions, including accessibility, courteousness, responsiveness, well-trained employees, and right first time delivery. These expectations are constantly evolving, and understanding them helps organizations meet or exceed these expectations. Successful customer service strategies, like Patagonia's outdoor clothing, Lyft's transportation, and Lego's toys, can help organizations improve their performance and attract younger customers.

[Fundamentals of Logistics, Supply Chain & Customer Service (udemy.com)](https://heidelbergmaterials.udemy.com/course/build-award-winning-customer-service/learn/lecture/12776187#overview)

### Customer satisfaction

Internal service quality is crucial for an organization's sustainable profit growth. It involves driving motivation in the team, from selection and design to daily performance. This includes workplace design, job design, employee selection and development, recognition and reward, and tools to support them. Building a dream team involves careful selection, aligning organizational values with individual values, and encouraging team members to recommend new candidates. To drive internal quality, start with clear limits and expectations, ensure team members know the business's objectives, provide high-quality training, provide rewards and recognition, give positive feedback, support systems, and give the freedom to provide results.

Employee satisfaction is also crucial, as it reflects the team's commitment to achieving goals. Job context and job content are essential factors in motivation and team member satisfaction. To achieve customer satisfaction, focus on the quality of service provided, balance of efforts, and measuring satisfaction in your team. Understanding customer needs and perceptions of value is crucial for making decisions. The process to achieve a goal, the price of the service, and the effort put into the experience are also important factors to consider.

Internal quality drives employee satisfaction, which in turn leads to the delivery of external value to customers. Customer satisfaction is a result of designing and delivering services that meet the needs of the customer, resulting in satisfaction and loyalty. Focus on the service profit chain to achieve growth and profitability, ensuring a sustainable business model.

Employee satisfaction and customer experience are intertwined, and it's everyone's responsibility to exceed expectations. Empowering employees to create goodwill and exceed expectations is crucial. Leadership's attitude affects customers, and a positive customer experience is essential. Internal and external customers are important, and a strong culture can inspire interactions with both. Empowering employees as customers first and fostering goodwill can lead to better results.

customer-how-to-understand-customer-needs

[10 Things Every Customer Wants | Inc.com](https://www.inc.com/geoffrey-james/10-things-every-customer-wants.html)

[The Customer: How to Understand Their Needs (BITE SIZE) (udemy.com)](https://heidelbergmaterials.udemy.com/course/customer-how-to-understand-customer-needs/learn/lecture/3812066#overview)