12-2021

Developing a Process to Select B2B Target Markets With a Focus on Siemens SIMATIC Controllers

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A thesis
presented to
the faculty of the Department of Engineering Technology
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Master of Science in Engineering Technology

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by
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December 2021

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Keywords: market segmentation, target marketing, B2B markets, PLC industrial automation industry, segment attractiveness, segment mapping

ABSTRACT

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The process to identify and describe target markets can be challenging for marketers due to the complexity of B2B markets and industrial products. This case-based study aims to bridge the gap between theory and praxis by developing a process to determine target markets for Siemens SIMATIC controllers, which are highly technological products designed for process control and used in industrial applications. The author conducted a literature review to investigate the current understanding of B2B market segmentation and target marketing and collected qualitative data from Siemens. This study defines segmentation variables leveraging segmentation models as a foundation to build and describe customer clusters. Next, target markets for SIMATIC controllers, focused on redundant systems, are selected and mapped. On that basis, the author derives a process for reviewing and defining target markets for the existing controller portfolio and future product launches.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my committee chair and graduate program advisor, Dr. Sims, for his assistance and support at every stage of my master's studies and for valuable guidance and advice for this thesis project. My gratitude extends to the Engineering Technology and Graduate Studies Faculty for the Graduate Assistant stipend and funding opportunity to undertake my studies at the College of Business and Technology at East Tennessee State University. I would like to extend my sincere thanks to Dana Eckerle Harrison and David Golden for their valuable insights, support, and advice throughout this project and through their supportive and excellent courses Marketing Research and Analytics and Global Business.

Also, I am extremely grateful to Siemens, which provided me the opportunity to work on this project. I would like to thank the Factory Automation Marketing and Business Development team for their warm welcome and support of my research project with valuable insights through several discussions. A special thanks goes to my supervisor Jim Wilmot who dedicated time to answer questions, provided tools, resources, and feedback to the process of segmentation and targeting, as well as mentored me throughout my time at Siemens.

Finally, my deep appreciation goes out to my family, partner, and friends for all their encouragement and support throughout my master's studies, as well as for stimulating discussions and proofreading of my thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1. Project Summary

> "Best-practice marketing strategists base their value propositions on the points of difference that matter the most to target customers, responding clearly and directly to the customer's business priorities" (Hutt & Speh, 2017, p. 21).

Hence, a sound definition of target markets is a crucial and integrative part of developing a marketing strategy and can provide organizations a strategic competitive edge (Weinstein, 2014). Reaching the right audience with tailored content and suitable sales channels ultimately increases the effectiveness of marketing activities. Additionally, the rising digitalization has been facilitated personalized and targeted marketing campaigns.

A crucial previous process is identifying and describing target markets, which requires knowledge about the market, existing customers, and prospects accompanied with an evaluation to pinpoint the most valuable customers for an organization. Especially in B2B markets in which products are built for an anonymous market rather than developed for a specific project, marketers segment the market in clusters characterized by homogenous buying behavior and needs and derive distinguished marketing strategies. Thus, market segmentation provides a guideline for allocating marketing resources, focused on the most profitable segments. Besides, it provides the basis for aligning customers' needs with the organization's offerings in delivering value. Lastly, market segmentation supports the effective and efficient use of marketing and sales resources as well as replicating success and finding new growth opportunities (Hutt & Speh, 2017).

Independently of its advantages, defining target markets can be challenging for marketers not only due to the complexity of B2B markets and industrial products but also because it is strongly interrelated with other processes within a marketing management framework and

influenced by the organization's product and market structure. Mora Cortez et al. (2021) state, "more than 30 years of research has not produced comprehensive guidelines for developing robust B2B market segments". With too small defined target markets, a business might miss valuable prospects. Contrary, if the target market is too broad, the message might not be personalized enough. Hence, defining target markets is a crucial challenge in building a B2B marketing strategy, including the upstream and interrelated process of market segmentation.

Background

This study builds on a project working with Siemens Industry, Inc. and their marketing team, Digital Industries Factory Automation in the U.S. The Siemens Group is a multinational technology enterprise with headquarters in Munich, Germany, which completed the fiscal year 2020 with a revenue of €57.1 billion and 293,000 employees. As a conglomerate, Siemens operates in diverse segments, including Digital Industries, Smart Infrastructure, Mobility, Siemens Advanta, Portfolio Companies (containing different business units), and Siemens Healthineers (Siemens, 2021a).

The business unit Factory Automation in the segment Digital Industries is an innovation and technology leader in industrial automation and digitalization. The Digital Industries segment offers product and system solutions used in discrete, hybrid, and process industries enabling customers to optimize entire value chains from product design and development, production to post-sales services. Those offerings include equipment and software products such as:

- Automation systems and software for factories, numerical control systems, motors, drives, inverters, and integrated automation systems for machine tools and production machines
- Process control systems

- Machine-to-machine communication products
- Sensors
- Radiofrequency identification products
- Software solutions for product and lifecycle management, simulation, and testing (Siemens AG, 2020a).

The Siemens industrial automation systems are known by the product name SIMATIC. These include controllers or Programmable Logic Controllers (PLCs), which are small and complex industrial computers consisting of modular components designed to automate control processes. While a PLC has many components, they mainly can be classified into processors (CPUs), discrete and analog Inputs, and Outputs (I/O's). Basically, the CPU monitors the status of inputs, processes and performs logic, and operates the output logic. Although the literature discusses differences between PLCs and PACs (Programmable Automation Controllers), the terms are often used interchangeably since they perform the same essential functions (Edwards, 2017; Gates, 2017). This study uses the term controller or PLC, referring to the complete spectrum of controllers without further distinguishes between PLCs and PACs. Typically, PLCs are used in manufacturing industries. But they are also used for other automated and control tasks such as in traffic light signaling, roller coaster, or baggage handling systems in airports.

A marketing manager at Siemens (JW, Siemens Industry, Inc., personal communication, September 11, 2020) wants to develop a process to increase personalization in marketing campaigns and reach the right customers in the U.S. Additionally, the marketing manager formulates the goal to replicate success for a relatively new product family within the Siemens SIMATIC controller portfolio.

However, the process of market segmentation and targeting can be challenging and expensive. Amongst others, a business marketer faces challenges like which target marketing strategy is reasonable, who the most valuable customers are, what is characterizing them, and how they can be classified. First and foremost, it requires understanding the market demand. But it also includes understanding competitors, product applications, buying criteria, or buyer characteristics. Heterogeneous customers and numerous applications characterize the automation market, which makes a sound segmentation and targeting approach reasonable in intending increasingly personalized campaigns.

Project Objectives

This case-based study aims to bridge the gap between theory and praxis by developing a process to determine target markets for SIMATIC controllers offered by Siemens Digital Industries, USA. The objective is to create a framework applicable to identify and prioritize target markets for Siemens SIMATIC controllers. Within an existing structure and segmented market, the study aims to create a step-by-step approach to identify applications for a specific product family and to define how to target relevant customers accordingly. The goal is to emphasize new opportunities for particular product lines while not neglecting customer-centric solution selling. The process to be developed intends to support the following questions:

- Which B2B segmentation models and targeting variables are reasonable to use?
- Within the automation industry, what are the target industries for different types of controllers? How can Siemens reach those target industries?
- How can industry segments be evaluated, assessed, and prioritized?

- Concerning an overall target marketing framework, what are adjacent tasks and tools to consider in the process?
- How can the process of defining and re-defining target markets justify an ever-changing market?

The subsequent goals are to increase marketing and sales effectiveness, efficiency, and revenue by improving sales success.

While it is essential to review the state of the art of industrial market segmentation, this study's goal is not to recommend new market segmentation for Digital Industries but to provide a practical framework for defining target customers and segments for SIMATIC controllers. Hence, the author investigates the segmentation models to use within an existing structure to cluster the relevant market further and develop a process to explore existing and new growth opportunities for PLCs.

The author captured the organization’s structure, including the sales and marketing structure, to build a segmentation and targeting model and derive a process within an existing system. However, the organizational structure is not presented for non-disclosure reasons. Also, in terms of globalization and Siemens being a multinational enterprise, the relevance of an international marketing strategy is recognized. However, this study focuses on the U.S. target marketing process only.

Target State

The study develops a process to select B2B target markets integrated into an overall marketing strategy framework. It offers practical guidelines, hands-on tools, templates, and a step-by-step approach to find and prioritize target markets. Thus, the process is applicable for other SIMATIC product lines and future product launches in the U.S. Checklists and templates

are provided, which can be tailored to specific segmentation initiatives and targeting goals. Finally, the study includes continuous data collection and evaluation recommendations to discover adjacent markets and identify patterns or shifts in customer buying behavior.

After investigating the redundant controller family in more detail, the expected results include a list of target and focus industries for the redundant systems. Lastly, the author outlines a concept of positioning the offer to pre-defined target markets, emphasizing an integrated communication strategy.

The study does not aim to formulate a marketing plan for SIMATIC controllers or to segment the Digital Industries' market. Instead, it emphasizes target marketing for a product family and promotional implementation while intending to center the customer. Table one provides the reader with an overview of topics discussed by chapter.

Table 1

Study Outline Overview

Chapters	**Key points discussed**
Chapter 1. Project Summary	• Briefly states the project background, objectives, and expected results
Chapter 2. Literature Review	• Briefly introduces relevant references used • Discusses the results of a thematical literature review, focused on B2B segmentation, target marketing, and related key activities
Chapter 3. Approach to solution	• Presents different steps performed to develop a B2B target marketing process for SIMATIC controllers
Chapter 4. Defining target markets for Siemens SIMATIC controllers	• Building on the literature review, it discusses several theoretical approaches in more detail and applies those to define target markets for SIMATIC controllers focused on redundant controllers

Chapter 5. Results and Discussions on B2B Target Marketing Process SIMATIC controllers	• Presents and discusses the overall process to identify, describe and define target markets, states limitations of the study and recommended course of action • Discusses limitations of the study and further research recommendations

Chapter 2. Literature Review

LaPlaca and Katrichis (2009) state that in light of its importance and contribution to the U.S. and other developed countries' economies, B2B Marketing is underrepresented compared to B2C Marketing. Historically, it was not before introducing the first B2B Marketing focused Journal, Industrial Management, in the early 1970s until B2B Marketing Research gained popularity.

Scope of Literature Review

The scope of the literature review is to identify relevant authors in B2B marketing and investigate the state of the art in B2B segmentation and targeting. It is vital to understand the characteristics of B2B Marketing and the role of target marketing within to lay the foundation and capture the integrative nature of B2B target marketing. The author discusses the following main topics in the literature review:

- Characteristics B2B Marketing,
- Target Marketing,
- Target Marketing selection strategies,
- Overview B2B Segmentation,
- Key marketing activities related to target marketing.

Hence, a thematically organized literature review is conducted to gain an in-depth understanding of relevant topics and terminologies. While chapter two lays the foundation, chapter four discusses segmentation models and targeting methods in more detail.

Brief Introduction of Relevant References

Sources include Journals like Marketing Intelligence and Planning, Journal of Marketing Analytics, Journal of Business Research and Journal of Business-to-Business Marketing, books or ebooks, and webpages.

Relevant books and ebooks emphasizing B2B marketing include Industriegütermarketing (Industrial Marketing)" from Backhaus and Voeth (2014) reflecting the current state of research in B2B marketing, cited by 1,567 scholars[1], and "Business marketing management: B2B" from Hutt and Speh (2017), cited by 638 scholars[2]. Kleinaltenkamp and Saab (2009) published "Technischer Vertrieb: Eine praxisorientierte Einführung in das Business-to-Business-Marketing (Technical Sales: A practical introduction to Business-to-Business Marketing)", in which the authors introduce essential methods and concepts in B2B marketing. Furthermore, a leading marketing text, "Marketing Management" by Kotler and Keller (2016) is considered. The 15th edition alone counts 1,153 citations in google scholar[3]. All books mentioned cover B2B marketing strategy, including segmentation and targeting to a certain extent.

[1] A Google Scholar search of "Industriegütermarketing (Industrial Marketing)" from Backhaus/Voeth yielded in 1,567 total citations, including several editions/publication dates 2005, 2011, and 2014. Retrieved from Google Scholar. June 11, 2021. https://scholar.google.com/citations?hl=en&user=q-vPDYQAAAAJ#d=gs_md_cita-d&u=%2Fcitations%3Fview_op%3Dview_citation%26hl%3Den%26user%3Dq-vPDYQAAAAJ%26citation_for_view%3Dq-vPDYQAAAAJ%3ACHSYGLWDkRkC%26tzom%3D240

[2] A Google Scholar search of "Business marketing management: B2B" from Hutt/Speh yielded in 638 total citations. Retrieved from Google Scholar. June 11, 2021. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C43&q=hutt+and+speh+business+marketing+management&oq=hutt+and+speh+

[3] A Google Scholar search of "Marketing Management" from Kotler/Keller yielded in 1,153 total citations. Retrieved from Google Scholar. June 11, 2021. https://scholar.google.com/scholar?cluster=6775918175821464236&hl=en&as_sdt=5,43&sciodt=0,43

Besides, Weinstein published several works about market segmentation[4]. This study considers Weinstein's book "Handbook of Market Segmentation: Strategic Targeting for Business and Technology Firms" (Weinstein, 2004), cited by 294 scholars, as well as two journal articles "Target Market selection in B2B technology markets" (Weinstein, 2014) and "Segmenting technology markets: Applying the nested approach" (Weinstein, 2011). Weinstein is an internationally known expert in segmentation and has consulted for companies like Bayer, Citrix Systems, Hewlett Packard, Motorola, and Bristol-Myers Squibb (Weinstein, 2014). Also, this research includes a recent publication and domain-based findings of Mora Cortez et al. (2021), who conducted a systematic review of 88 B2B segmentation research articles published between 1986 and 2019.

A more detailed discussion about relevant qualitative B2B segmentation models follows in chapter four, which includes segmentation approaches developed by several authors, including:

- Hutt and Speh (2017)
- Backhaus and Voeth (2014)
- Sung Kwon et al. (2014) in McKinsey and Company
- Wind and Cardozo (1974)
- Choffray and Lilien (1980), Lilien and Kotler (1983) und Strothmann and Kliche (1989b), Scheuch (1975), Groene (1977) as cited in Backhaus and Voeth (2014)
- Shapiro and Bonoma (1984)
- Clayton Christensen cited by Nobel (2011)

[4] A Google Scholar search of Art Weinstein indicated that the author published several works about market segmentation. Retrieved from Google Scholar. June 11, 2021. https://scholar.google.com/citations?hl=en&user=qOKoSHgAAAAJ

- Roger J. Best as cited in Kotler and Keller (2016)

B2B Marketing

The American Marketing Association (2021) defines marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large". Indeed, marketing is not limited to the classical functional view of sales pushes but has the cross-functional task to align the functions of an organization's product or service with the market demands to create value for stakeholders. Because all value-adding processes contribute to creating a value proposition, marketing is integrative in its nature. Besides, marketing needs implementation at the business segment level because a differentiation to the competitors is only achieved at a product or business segment level, depending on the offerings, but not for a whole company (Backhaus & Voeth, 2014).

While theories and practices may apply to both B2B and B2C marketing on a conceptual level, B2B marketing is an independent subdiscipline of marketing. It needs particular attention due to the different characteristics of business-to-consumer (B2C) and business-to-business (B2B) markets (LaPlaca & Katrichis, 2009).

The international literature and this study use the terminologies B2B marketing, industrial marketing, and business marketing simultaneously. However, Backhaus and Voeth (2014) further distinguish between industrial and B2B markets. Contrary to a B2C company, which offers goods to consumers such as Coca-Cola, McDonald's, or Target, a B2B company offers goods to other businesses. In a strict sense, the latter includes wholesale and retail companies, while industrial markets do not.

Characteristics B2B Marketing

B2B marketing differs from B2C marketing by following significant characteristics: The nature of the market, market demand, buyer behavior, buyer-seller relationships, environmental influences, and marketing strategy differ between B2B and B2C marketing (Hutt & Speh, 2017).

First, the type of customers discerns between B2B from B2C marketing. In business marketing, the customers are organizations, including commercial enterprises, governments (federal, state, local), and institutions (Hutt & Speh, 2017). For example, Siemens offers controllers to other businesses such as channel partners to resale and a manufacturing company that utilizes controllers to build other products. Also, customers are governmental bodies and institutions, such as universities. Hutt and Speh (2017) further distinguish commercial enterprises into users, original equipment manufacturers (OEMs), and dealers and distributors. Users buy products and services to produce other products and services and sell them either to the business or consumer market. Contrary, OEMs purchase industrial products and services to incorporate them into their products and sell to another company or the ultimate consumer market. For example, a Siemens controller can be sold to a car manufacturer to automate the manufacturing line. Hence, the car manufacturer uses the controller to build the car. As opposed to another example, Siemens sells the controller to a machine tool builder selling the machines to another business for producing a product. In this case, the machine tool builder is an OEM. Lastly, dealers and distributors resale the industrial products to users or OEMs. The preceding statements make clear that the three classifications are not exclusive. Rather one company can be an OEM and a user depending on how it utilizes the product. Concluding, understanding the different types of commercial enterprises and the different buying motivations derived is crucial to formulate a comprehensive marketing strategy.

Next, business markets are characterized by a derived demand, which refers to the link between the need for consumer products triggering demand for industrial products (Hutt & Speh, 2017). For example, if the controller operates in a production line in the food and beverage industry, ultimately, the market is driven by the consumer food and beverages demand. The dependency on the end consumer market can influence the price sensitivity of the product. Moreover, the demand for an industrial product tends to fluctuate more than the demand for consumer products because of the derived demand, requiring the marketing manager to monitor patterns and trends often on a global scale (Hutt & Speh, 2017).

Besides, B2B marketing can be multiorganizational (Backhaus & Voeth, 2014). Several organizations can influence the buying decision, which includes organizations in the upstream value chain, but also projects can be utilized by multiple organizations at the same level. While the organization that operates the controller in its automation and control process is the actual customer, other organizations with different intentions can be involved in the buying process. Hence, business marketers need a strategy to stimulate demand at multiple levels, called Multi-Stage Marketing. Some businesses require marketing stimuli to the direct customers, derived customers up to the ultimate end consumer, distinguished by a Pull and Push Strategy (Hutt & Speh, 2017). While a Push strategy focuses on the direct customer only, Multi-Stage Marketing intends to generate demand at subsequent tiers to generate a Pull Effect and ultimately demand from the direct buyers (Backhaus & Voeth, 2014). For example, Siemens follows Multi-Stage Marketing by generating controller demand at end-user industries to cause a pull effect and demand from system integrators or distributors.

Moreover, several individuals within an organization or several organizations rather than one single decision-maker can influence industrial buying decisions. Thus, the industrial buying

process can be multiorganizational and can involve several persons. The terminologies Buying Center or Decision Making Unit (DMU) refer to several persons, often with different job titles and functions, characteristics, expectations, or relationships to the selling organization, involved in the buying decision-making process (Backhaus & Voeth, 2014; Hutt & Speh, 2017). This study uses the terminology DMU when referring to multiple persons involved in the buying process.

Contrary to the consumer market, business markets often are characterized by a close and enduring buyer-seller relationship (Hutt & Speh, 2017). Industrial buying processes might also involve formalized procurement processes. Depending on the participants involved, this process can include a call for bids, for example, requested in construction projects often funded by the government. Because industrial products tend to have a high value and answering complex business problems, service can play an important role (Backhaus & Voeth, 2014).

However, increasing communication channels and digitalization have shaped the B2B buyer, who has become more consumer-like in being more social and more real-time. Being more social refers to how many one-to-one relationships between sales and key decision influencers have shifted to one-to-many relationships through social media or an expert blogger or speaker at a trade show. Indeed, the decision-maker might be influenced through this dynamic even before the sales call. Besides, buyers increasingly demand real-time digital interactions (Lingqvist et al., 2015).

Classifying Business Typologies and Goods in Business Markets

Business typologies differentiated by the types of goods sold influence target marketing strategies. Backhaus and Voeth (2014) distinguish between product, project, system, and integration B2B businesses types. Operating in a product or system business, a company

typically serves an anonymous market or market segments with ready-developed and produced products. Compared to other business types, less dependency after the transaction arises. Similar to the product business, a project business is characterized by a self-contained purchase process. But projects usually have a higher degree of specialization. For example, customer-specific product development does not serve an anonymous market but a single customer-focused transaction. Contrary, system- and integration businesses involve several buying transactions. While a system business is characterized by focusing on an anonymous market, an integration business develops products for single customers, again usually characterized by long-term business relationships.

Previous considerations clarify that different business types exist within B2B technological markets, impacting the marketing program.

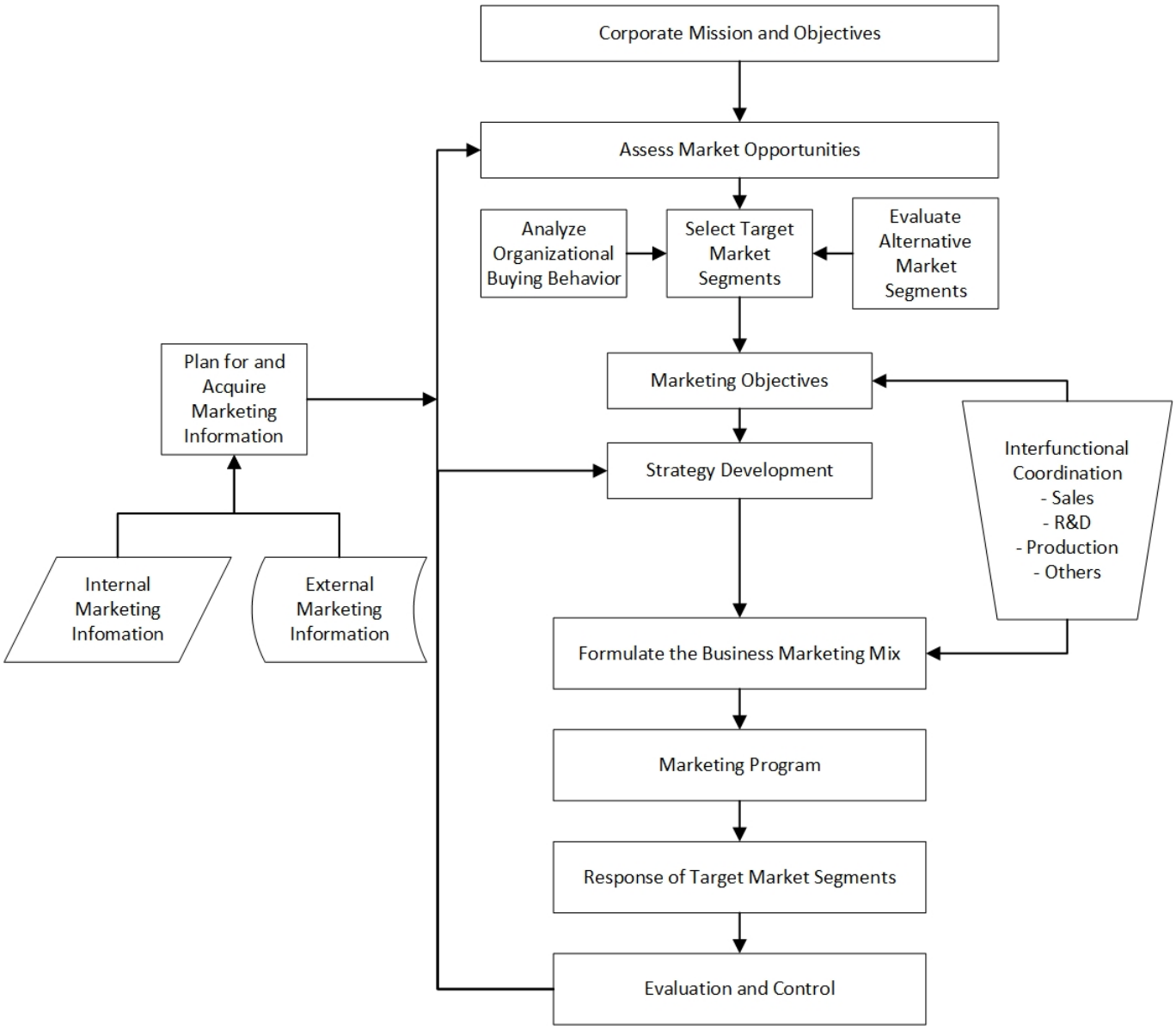
Target Marketing

Target marketing refers to business activities that build a part of an organization's marketing strategy (Terms Compared Staff, 2020a). Kotler and Keller (2016, p. 245) state, "market segmentation, targeting, and positioning are known as "STP" of marketing", which implies a process of three steps. After identifying and describing market segments, segments to target are selected, followed by a product positioning (Hutt & Speh, 2017; Kleinaltenkamp & Saab, 2009). However, those steps are strongly interrelated with other business marketing management processes, as illustrated in figure one. Based on the corporate mission and objectives, marketers assess market opportunities where buying behavior and segmentation are essential. On that basis, target market segments are selected, and a marketing strategy is derived, followed by a marketing mix and program definition. Lastly, the response of target market segments must be evaluated. The latter circles back to assessing market opportunities and

making necessary adjustments to the marketing strategy. Hence, the marketing management process must be continuous rather than static. Adjacent components are planning and acquiring marketing information, also referred to as marketing research, which includes monitoring and predicting external influences and the competitive environment. Finally, the marketing mix and objectives need inter-functional coordination (Hutt & Speh, 2017) .

Figure 1

Components of Business Marketing Management



Note. The Selection of Target Market Segments as an interrelated component within a business marketing management framework. Adapted from *Business Marketing Management: B2B* (p. 20), by M. D. Hutt and T. W. Speh, 2017, Cengage Learning. Copyright 2017, 2013 by Cengage Learning.

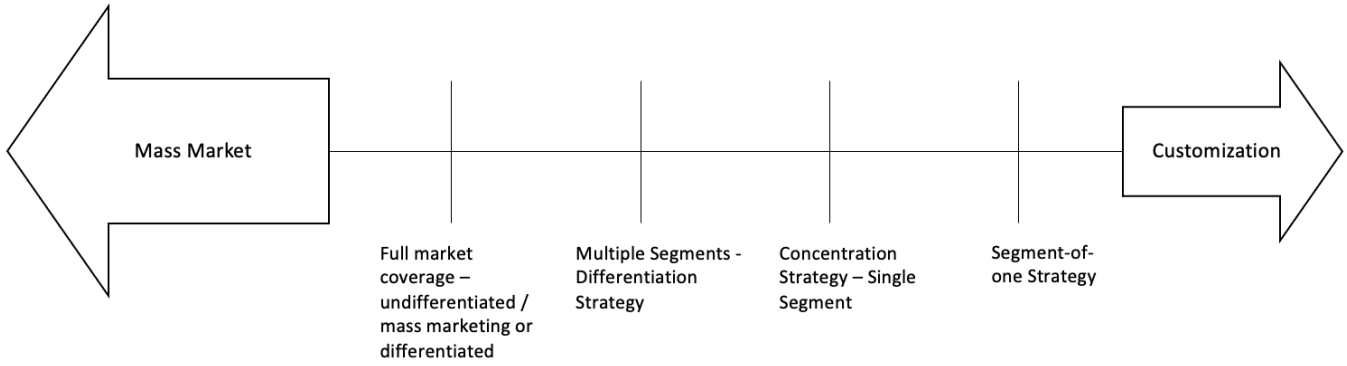
Target Marketing Selection Strategies

The target market selection is one of three pillars of the strategic marketing discipline market segmentation. If a company follows a full market coverage strategy, it attempts to serve all customer groups with its products. However, usually, only large companies are capable of pursuing full market coverage (Kotler & Keller, 2016).

Basically, an organization has two strategic options: first to segment a market or second to treat the entire market equally as potential customers. The latter is known as an undifferentiated marketing strategy or mass marketing. A segmentation strategy means developing unique marketing strategies for different customer needs. After the market is divided into segments, a decision on how to target follows. These include first differentiation, second concentration or single segment strategy, and third atomization, aka Segment-of-One Marketing (Kotler & Keller, 2016; Weinstein, 2004). An evaluation of market segments is incorporated, basically focusing on two factors: the segments' overall attractiveness and the company's objectives and resources (Kotler & Keller, 2016). While the author discusses details in chapter four, the following paragraphs outline possible levels of segmentation to guide target market decisions, as illustrated in figure two. Interrelated with the segmentation level, table two summarizes the business marketer's market selection options.

Figure 2

Levels of Segmentation to Guide Target Market Decisions



Note. Adapted from Marketing Management (p. 264), by P. Kotler and K. L. Keller, 2016, Pearson Education.

Table 2

Target Marketing Options

Segmentation Strategies	**Number of segments targeted**
Undifferentiated	Zero
Differentiation Strategy	Two or more
Concentration or single niche/segment	One
Segment-of one	Dozens to thousands

Note. Adapted from *Handbook of Market Segmentation : Strategic Targeting for Business and Technology Firms* (p. 12), by A. Weinstein, 2004, Routledge (https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=152354&site=ehost-live&scope=site&authtype=shib&custid=etsu).

Differentiation Strategy

A differentiation strategy refers to identifying and actively targeting two or more segments, which vary in customers' needs between the segments. Hereby, the literature distinguishes between a product and market differentiation or specialization. Market

differentiation focuses on the customer and depends on the market demand. Thus, a business focuses on serving many needs of a particular segment, such as selling different products to a customer group. The advantage is the focus on customers' needs, while the downside is the dependency on the selected segments, for example, if the market size decreases. Contrary, product differentiation is supply-side oriented, and a company sells a particular product to multiple market segments. The risk involved in a product specialization is the product may be supplemented by new technology or competitors gain value proposition when delivering a system solution rather than only a single product. Also, a firm can attempt to utilize synergy effects by compiling segments, which share some exploitable similarities, to supersegments (Kotler & Keller, 2016; Weinstein, 2004).

Single Segment Strategy

If a business attempts a concentration strategy, it decides to market to one of several potential segments only while ignoring potential business opportunities in other segments. As such, a single segment strategy is less expensive than differentiated marketing and can be an appropriate choice when dealing with limited resources or diversifying in a market outside of the core business (Weinstein, 2004). Also, it facilitates gaining an in-depth understanding of a specific segment and a strong market presence through focusing (Kotler & Keller, 2016; Weinstein, 2004).

Segment-of-One Strategy

A Segment-of-One Strategy has many names and variants such as atomization, customization, interactive segmentation, mass customization, micromarketing, one-to-one marketing, personalization, and Account Based Marketing (ABM). Independently of the terminology, it breaks the market down to individual customers. This approach gained popularity

among business strategists during the past decade. Also, a Segment-of-One Strategy can be utilized as a stand-alone strategy or in combination with a concentration or differentiation strategy. Tools like Key Account Management (KAM), Database marketing, flexible manufacturing systems, integrated distribution systems, and relationship marketing are used to implement this strategy (Weinstein, 2004).

While a Segment-of-One Strategy needs many resources and therefore is expensive, it also personalizes marketing and sales activities to the greatest extent. According to Weinstein (Weinstein, 2004), it is particularly useful for businesses selling specialized or costly equipment, creating marketing programs for governmental markets, exploiting large marketing databases, or offering extended product features. Lastly, this strategy requires a strong marketing information system.

Evaluation of B2B Target Marketing Strategies

Concluding, the target marketing strategy depends on available resources and business needs. Weinstein (2014) examined the use and success of target marketing approaches from the perspective of businesses by evaluating a survey answered by seventy marketing managers of U.S. companies in business technology markets. Appendix A shows the results of Weinstein's research of marketing selection strategies and target marketing success.

The author found that 75% utilize a differentiated targeting strategy, targeting two or more segments with multiple marketing strategies. 10% use a single segment and 7% a Segment-of-One Strategy. Only 7% state to use an undifferentiated marketing strategy. Thus, most companies utilize a differentiated approach, and more than half state to be successful or very successful in targeting markets. Another third claimed to be somewhat successful, and only about thirteen percent were unsuccessful. The author states possible reasons for the latter case,

including being unfocused or over-extended and targeting too many segments or niches. Participants expressed a Single Segment or Segment-of-One Strategy as successful. However, the latter findings are based on limited observations because only seven survey participants stated to use a Single Segment and five participants a Segment-of-One Strategy. Besides, implementing these strategies need more resources.

Overview B2B Segmentation

A differentiated target marketing strategy requires market segmentation. Hence, it is a crucial upstream and interrelated process of defining target markets. Especially in product or system B2B business, products are usually developed to serve an aggregation of single customers within the relevant market. However, in a heterogeneous market, where customers' buying behavior differs, market segmentation is reasonable to further divide the relevant market into submarkets, aka market segments or clusters (Backhaus & Voeth, 2014).

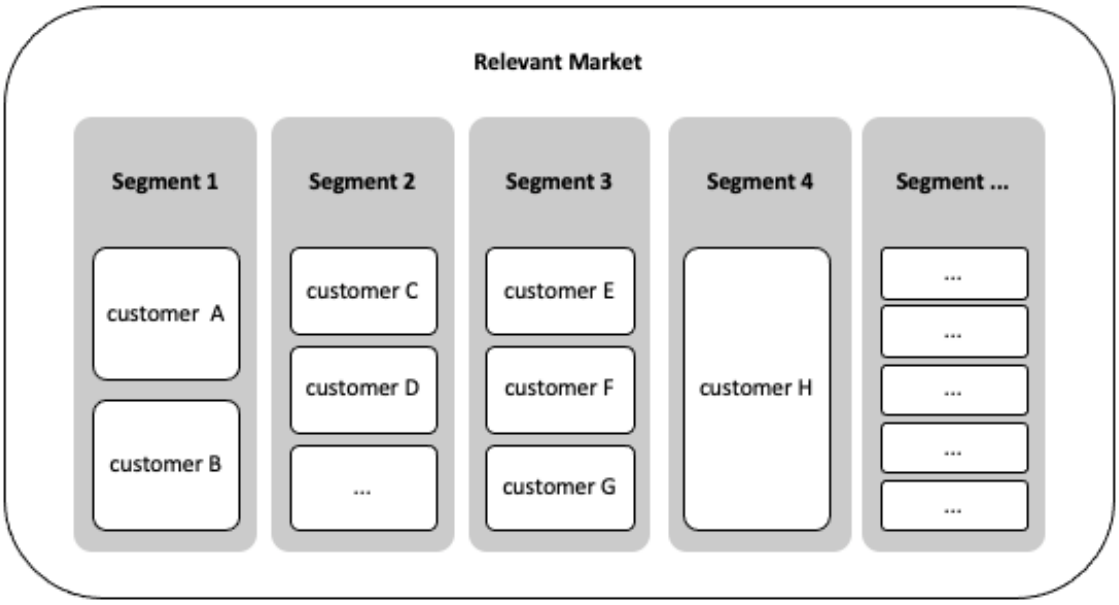
Definition Market Segmentation

Existing or potential customers within segments react homogeneously to marketing activities. Contrary, the reactions differ between segments or clusters (Kleinaltenkamp & Saab, 2009). Hutt and Speh (2017, p. 75) define a market segment as a "group of present or potential customers with some common characteristic which is relevant in explaining (and predicting) their response to a supplier's marketing stimuli". Figure three outlines the concept. A segment can consist of only one (Segment-of-One Strategy) to many existing and potential customers. Hence, not every customer within a segment is known. However, the ultimate goal is to describe the attributes of one segment as clear as possible. The segmentation criteria and the derived number of segments can vary concurrently. As a result, "marketing professionals recognize that

segmentation is both a science and an art" (Weinstein, 2004). Further discussions follow in chapter four.

Figure 3

Market Segmentation Illustrated

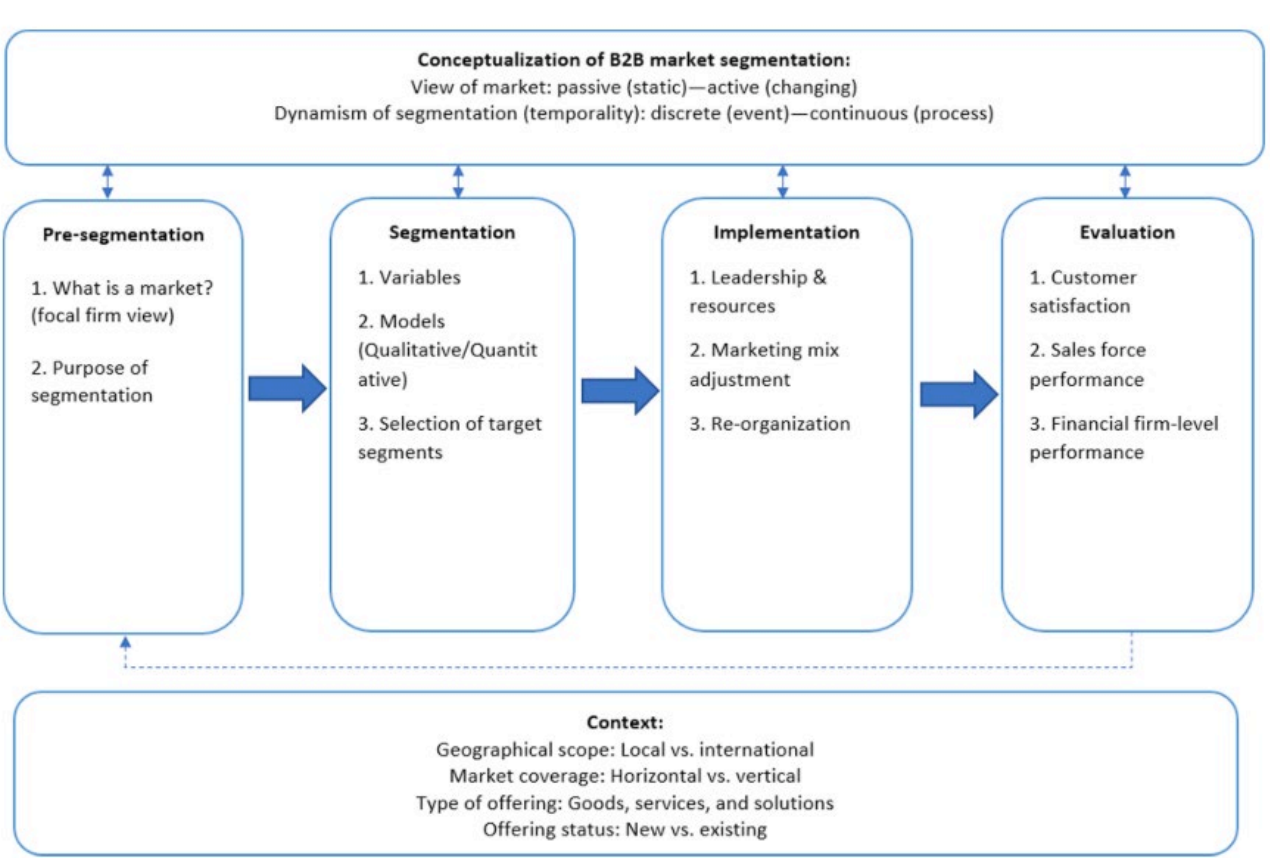


A Framework of B2B Market Segmentation

As a result of their literature review B2B market segmentation during 1986-2019 period, Mora Cortez et al. (2021) developed an integrative framework of commonly discussed topics (Figure four). As such, it shows considerations businesses should account for and a four-stage process integrating segmentation and targeting in marketing strategy.

Figure 4

Market Segmentation Framework by Mora Cortez et al. (2021)



Note. From "B2B market segmentation: A systematic review and research agenda," by R. Mora Cortez, A. Højbjerg Clarke, P. V. Freytag, 2021, *Journal of Business Research*, 126(December 2020), p. 420 (https://doi.org/10.1016/j.jbusres.2020.12.070). Copyright 2021 by Elsevier Inc.

Because of market vitality and continuous changes in customer demands, the view of the market as static or changing is interrelated with the dynamism of segmentation. Authors such as Shapiro and Bonoma (1984) or Wind and Cardozo (1974) introduced multi-stage models that start from the relevant market. Hence, it is reasonable to ask what a relevant market is. In a broad sense, the relevant market is already the first level of target marketing. Weinstein (Weinstein, 2004) states a market definition as a springboard for developing a mission and vision statement, which must occur before designing target market strategies. According to Buzzell (1978) and

Abell (1980) cited in Weinstein (2014) customer groups (market segments), customer functions and uses (market needs), and technologies are the three fundamental elements market definitions are built on. Business executives select primarily one of these elements when re-defining markets.

As a result of market dynamism, market segmentation has a static and a dynamic or continuous aspect. While a static market segmentation is timely bounded, dynamic segmentation has the task of managing the existing segments, including a continuing evaluation and adaption where necessary (Backhaus & Voeth, 2014). An active view of the market is crucial B2B marketers and requires a continuous view of the segmentation and targeting process.

Next, Mora Cortez et al. (2021) found authors have highlighted that segmentation is purposive and context-dependent, while few considered different purposes. However, the authors also state that overall knowledge of how the segmentation purpose influences the segmentation process, such as whether segmentation variables or methods are more appropriate than others, is limited.

The segmentation includes considering variables, models, and selection of target markets, which is further discussed in chapter four. The third step is implementing the segmentation model, including the availability of resources and leadership commitment and guidance in the segmentation roll-out. Besides, reorganization might be necessary in, for example, how a firm views the markets or of the internal structure to serve the defined segments.

Lastly, evaluation can include customer satisfaction, sales force performance, and financial performance.

Finally, Mora Cortez et al. (2021) claim that authors in reviewed manuscripts discuss B2B segmentation on the four most representative contexts: geographical scope, market coverage, type of offerings, and offering status.

Key Marketing Activities Related to Target Marketing

This chapter briefly introduces key marketing activities related to targeting.

Competitive Analysis and Market Research

Weinstein (2014) found that a robust competitive analysis function supports success in target marketing. The author implies that "market and industry research, competitive scanning and intelligence, contingency planning, scenario building, market segment mapping, and other competitive-based strategic marketing planning activities can play a useful role in target market decisions as well as future market redefinitions".

Overall, market research "involves systematically gathering, recording and analyzing data about customers, competitors and the market, and turning this data into insight that can drive marketing strategies and campaigns" (Stokes, 2013, p. 41). Thus, conducting market segmentation and selecting target markets require a wide variety of information. Market research can get increasingly complex in B2B markets and blurring derived demands. For example, products are developed for, and the demand is driven by an end-user market. Indeed, knowing the end customer's needs and markets is crucial. However, the products can be mainly sold over channel partners where the end-customer is not direct. To answer questions like how can a company obtain information about an end-user market if those are not direct customers? How do customer needs differ between the value chain partners? Or to formulate a product's value proposition, the ongoing process of data gathering and representation is crucial for selecting target markets.

Information gathering can be deployed into continuous market research and ad-hoc research. Continuous data gathering consists of longitudinal studies such as panel studies to show the development of analyzed variables. The goal of continuous data gathering is that a company always has the necessary information to improve its market position. Although this necessity seems obvious, most companies neglected the holistic integration of continuous data gathering (Backhaus & Voeth, 2014). Contrary, ad-hoc research captures information about a relevant research question at one specific time.

Following basic questions can guide the data collection process:

1. Which information is needed?
2. Who has this information?
3. How can the data be collected?
4. How can the data be analyzed?
5. Who needs the information within the organization? (Backhaus & Voeth, 2014).

Customer Value Proposition

A value proposition describes the set of benefits a product or service delivers while acknowledging that a business cannot deliver the highest value in each attribute, for example, highest service, highest price, highest features. A value proposition describes what sets the offering apart. A customer value proposition extends that thought by including the customer and the target market and therefore acknowledges that an offering might not appeal to everyone, but captures the value delivered to a predefined target market (Merritt, n.d.). Hence, a customer's value proposition „captures the particular set of benefits that a supplier offers to advance the performance of the customer organization" (Hutt & Speh, 2017, p. 9) Ultimately, the customer value proposition is interrelated with the target customer or segment because the customers'

needs and pain points need to be defined before a strong value proposition can be developed. Customers compare the value a supplier offers with other competitors in the market or at least with the next best alternative. The building blocks of a value proposition include points or parity, which are value elements with a similar performance as the next best alternative, and points of difference, those value elements that make the offerings superior or inferior to the next best alternative. Hence, crafting a strong value proposition requires assessing the company, the competitors, and the customers. The value of business offerings can include many services, technical, economic, or social benefits, which the customer compares to the next best alternative. Thus, a marketer needs to offer a set of benefits to advance the customer organization (Hutt & Speh, 2017).

Customer Relationship Management

Customer Relationship Management (CRM) "is a cross-functional process for achieving continuing dialogue with customers across all their contacts and access points, with personalized treatment of the most valuable customers to ensure customer retention and the effectiveness of marketing initiatives" (Hutt & Speh, 2017, p. 59). It is commonly supported by CRM systems, enterprise software applications, such as Salesforce (Salesforce.com, 2021). A CRM system braces marketing research and analytics as well as customers communications and managing all touchpoints with the organization. Hence, it is important to find new growth opportunities, evaluate, and serve target markets.

Market Positioning

Market positioning refers to establishing, communicating, and delivering the right benefit of offered products or services to each predefined target segment (Kotler & Keller, 2016). These captures formulating marketing objectives and strategy, including the marketing mix. Also, a

segmentation implementation strategy can include integrative consequences such as alignment with leadership and resources or a reorganization (Mora Cortez et al., 2021).

With its origins in B2C markets, the marketing mix consists of 4 P's (product, place, promotion, and price). Recapturing the business types, the marketing situation in a product business is similar to the B2C market in emphasizing an efficient and effective policy before the buying transaction occurs (Backhaus & Voeth, 2014). Hutt and Speh (2017) state a Business Marketing Mix includes product or service, distribution channels, pricing, personal selling, advertising, and sales promotion.

Chapter 3. Approach to Solution

Chapter three includes two interrelated sections. First, it embraces the approach solution to develop a process to select target markets focused on Siemens SIMATIC controllers. Second, this chapter describes the steps conducted to identify target markets for a specific product line within the SIMATIC controller product family.

Developing a Process to Select Target Markets

Research has indicated that further investigations in qualitative market segmentation approaches are needed to suggest methods and derive a B2B target marketing process. Questions like what segmentation and targeting models exist, and which ones are reasonable within this study have to be addressed. Hence, to gain and present an in-depth understanding of different segmentation models and target marketing strategies, secondary qualitative data have been collected from relevant literature.

The author agrees with Mora Cortez et al. (2021) who state that the literature of B2B segmentation and targeting is fragmented and lacking a comprehensive guideline for developing robust B2B market segments. However, this process and the effectiveness of different targeting strategies is highly depended on the organization's resources, structure, product, and markets. While a process can serve as a guideline, it is not a one fit to all solution. For example, Weinstein's (2014) shows a differentiation strategy is more effective than an undifferentiated marketing strategy for most of B2B marketers. But a segment-to one strategy can still be an effective solution for example in a project business or as a supplementary strategy for most valuable customers.

Also, Möller and Parvinen (2015) claim concerns about the theory-practice gap in business marketing research and the complexity of B2B marketing and sales management

managerial implementation. While a holistic perspective of B2B market segmentation can be given by summarizing state of the art, it lacks a business-specific practical approach and techniques because market segmentation is highly influenced by the organizational structure and the business context. Mora Cortez et al. (2021) suggest an action- and case-based research, where the researcher actively participates in justifying the conceptual, applied, and technological challenges in the segmentation task. Thus, the author has aimed to use the theoretical approaches within the complexity of a B2B product market and the organizational structure focused on SIMATIC controllers by actively facilitating segmentation and targeting for one specific product line. The goal is to identify the needs and challenges along the way and derive a process and recommendations.

Identifying Target Markets for Siemens Controllers

The research included qualitative data collection. The author collected secondary internal and external data and primary data through discussions with marketing, business development managers, and a distributor. Table three provides a subtask overview of the segmentation research initiative and data collection.

Table 3

Segmentation Research Initiative - Overview Subtasks and Data Collection

Subtask	Data Collection
Pre-Segmentation Considerations	
• Identification of resources and tools	• Discussions with marketing and business development managers to identify resources • Review of resources to derive and access segmentation variables
• Market structure and the relevant market	• Review of products and existing industry classification • Attendance of several product and innovation presentations

	• Primary data through several meetings with regional and international product and marketing managers
• Organization's structure	• Review of Organigrams and discussion with marketing manager
State the Goal of Segmentation Research Initiative	• Conversation with marketing manager, derive from project goals
Identification of Market Segments	
• Segmentation variables	• Secondary data B2B segmentation literature, Brainstorming (considering results of current state analysis)
• Segmentation models	• Secondary data B2B segmentation literature
• Selection of models	• Own assessment of models considering current state analysis
• Selection of segmentation variables	• Qualitative assessment of segmentation through discussion Siemens marketing manager and assessment matrix using evaluation criteria
Description of Market Segments	
• Market industry research redundant controllers	• Primary and secondary data collection as outlined in chapter 4
• Develop breakdown of other segmentation variables	• Discussion marketing manager • Review internal documentation and presentations
Select target cluster	• Based on previous findings and through discussion marketing manager

In an interview with a marketing manager, the redundant controllers within the SIMATIC controller family were selected to focus the segmentation and targeting process on. As being a relatively new product to the U.S., investigations into the market, existing wins, and prospects for a redundant controller in line with targeted marketing stimuli are reasonable (JW, Siemens Industry, Inc., personal communication, February 2021).

Recapturing the B2B marketing management framework shown in chapter two, defining target markets is interrelated and integrative with adjacent marketing processes. Therefore, it is essential to identify available resources for adjoining tasks, capturing the product, market, and

organizational structure, and explore available resources considering target marketing efforts. The current state analysis is the basis to first brainstorm and define reasonable segmentation variables, second asses the segmentation variables or the evolving clusters, and third derive a marketing strategy. For example, considering clusters used in marketing research platforms or LinkedIn supports relevant tasks like a demand analysis or positioning of the product. Additionally, an assessment of segmentation variables requires knowledge about the current state. For instance, an evaluating of a variable on segment accessibility needs an understanding of available distribution channels.

Resources

After discussions with marketing and business development managers, the author identified and reviewed several resources, considering the use for segmentation and targeting efforts. Table four classifies Siemens internal and external resources for marketing research or demand analysis and internal and external product positioning tools and communication channels. A review of existing resources concerning market segmentation and targeting possibilities has provided valuable input. Existing clusters, for example, used by D&B Hoovers and Bombora, provide impulses of thought of possible segmentation variables to facilitate the marketing research process. Lastly, digital communication channels like LinkedIn provide valuable targeting clusters.

Table 4

Identification of Resources for a Demand Analysis and Product Positioning

	Internal	External
Demand Analysis	• CRM System • POS Data • Product Documents and Presentations • Sales, Marketing and Business Development Manager • Internal Conferences • Etc.	• D&B Hoovers • Industrial Info • AlphaSense • ARC Advisory Group • IBIS • Statista • Bombora Intent Data • Benchmarking • Etc.
Product Positioning Tools & Communication Channels	• Content Management Pathfactory • Lead & Campaign Management Eloqua • Application References • Application Assets • Internal Conferences • Yammer • Intranet • Etc.	• Social Media (organic and paid) • Search Engine • Fairs & Tradeshows • Print Press • E-mail • Webinars • Distributor Resource Center • Podcasts • Web page • Flyer • Banner • Etc.

Segmentation Model

Leveraging the traditional "nested" and the network approach, segmentation variables for the controller market were defined, which support the transition to a multidimensional cluster building and description. Taking a needs-based segmentation approach into account, the author conducted different steps to select target markets focused on a single Siemens controller product line. Porter's five forces framework is the tool to analyze the industry.

Subsequent Steps and Process

On that basis, target segments were mapped, and a positioning emphasizing a communication strategy was derived. The author used tools like Mindmanager, Excel, and Microsoft Visio to develop templates and checklists as well as to create and present an overall process.

Chapter 4. Defining Target Markets for SIMATIC controllers

Chapter four describes the segmentation research for Siemens SIMATIC controllers, starting with stating the relevant market and the goals of the segmentation analysis. Next, the author investigated the literature to address two main questions. First, how to identify market segments, and second how to assess and select market segments. On that basis, the market segmentation and targeting initiative for Siemens with a focus on redundant PLCs is conducted. Lastly, this chapter captures the segmentation implementation emphasizing a product positioning in terms of marketing communications.

The Relevant Market

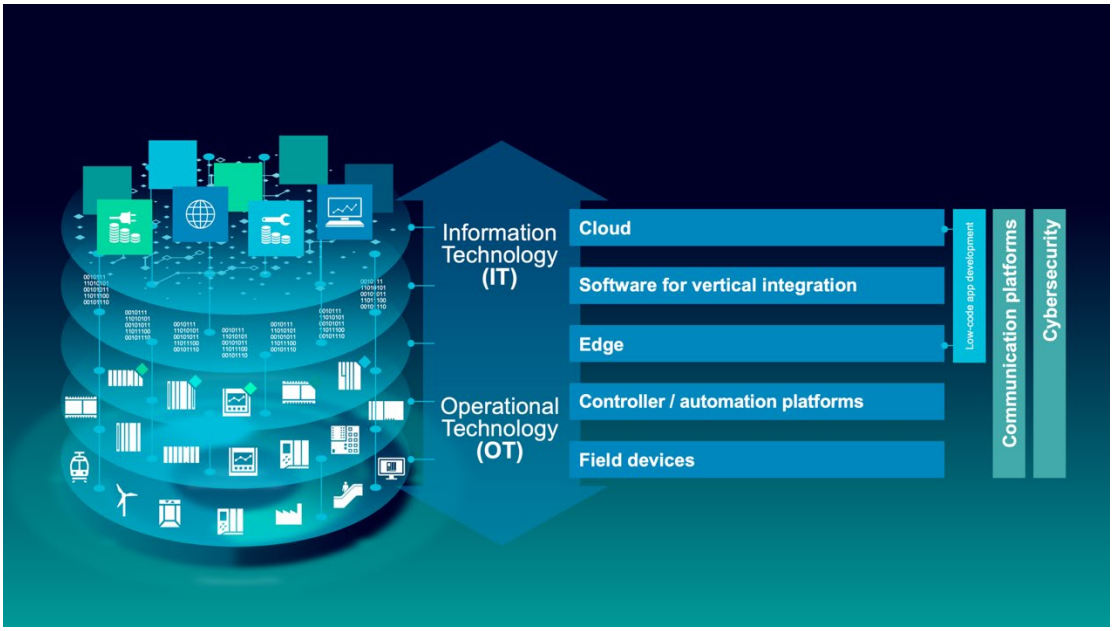
The basis of a demand market segmentation is the definition of a relevant market, which is concurrently the start of the segmentation process. Mora Cortez et al. (2021) refer to it as a part of the pre-segmentation process. Thus, segmentation preceding considerations on what is the relevant market for an organization are necessary (Mora Cortez et al., 2021; Weinstein, 2004). The relevant market for further considerations in this study is the demand-side of controllers within the Siemens Digital Enterprise portfolio, which is illustrated in figure five. Siemens (2021b) defines a digital enterprise as a business that incorporates digital tools and technologies across all aspects of its operations and thus has completed the digital transformation. A digital enterprise combines the real and the digital world by collecting and understanding a massive amount of data created in the Industrial Internet of Things (IoT) through electrification, digitalization, and automation (Siemens, n.d.-a).

Broadly expressed, the relevant market for controllers consists of all organizations that automate or will potentially automate control processes, which includes existing and potential customers who are or become digital enterprises. Hereby, organizations not only refer to

commercial enterprises but also governmental units and institutions (Hutt & Speh, 2017). For instance, the customer can be a local government agency, a manufacturer, or a university. As a result, the demand market of a PLC does include not only manufacturers utilizing automation but also other industries such as water wastewater or traffic light control systems where automated and control tasks are performed. Concurrently, the Siemens technology of the market and customers utilized is not limited to the actual CPU but includes the whole Siemens automation solution.

Figure 5

Digital Enterprise Solution Portfolio Framework Siemens

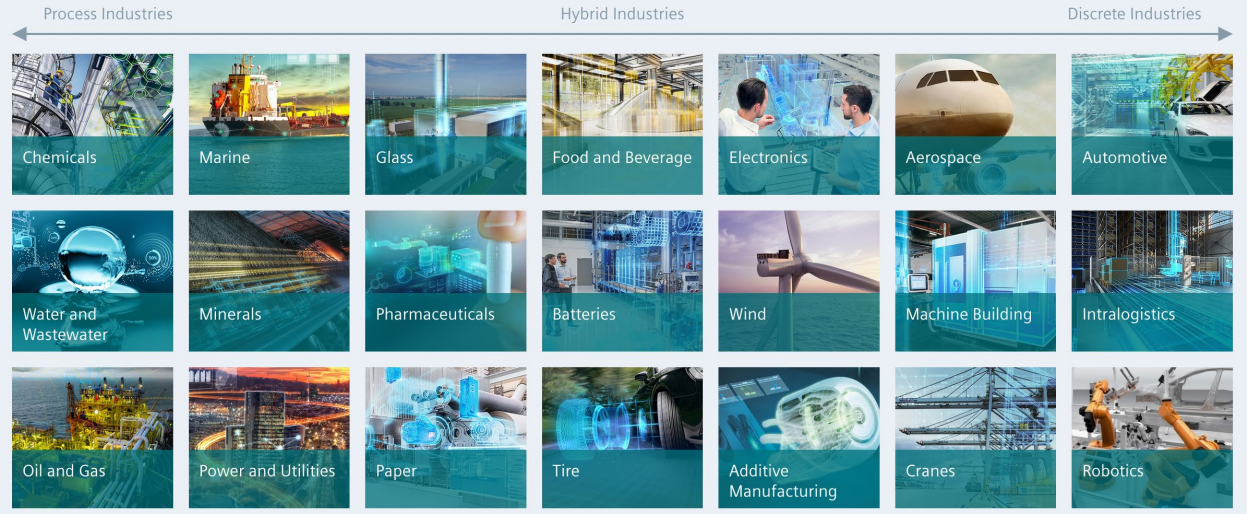


Note. Digital Enterprise solution portfolio Siemens. The controller demand market is stated as the relevant market for further market segmentation considerations. From *Bringing together Operational Technology (OT) and Information Technology (IT)* by Siemens, n.d., Digital Enterprise | Topic Areas | Siemens Global (https://new.siemens.com/global/en/company/topic-areas/digital-enterprise.html). Copyright 1996-2021 by Siemens.

Hence, while the market is bounded to automated processes, controllers can be used in a variety of applications and industries within. Siemens states 21 industry segments for their Digital Enterprise product portfolio classified in a range between process, hybrid, and discrete industries (Figure six). Discrete manufacturing refers to the creation and assembling of finished distinct products or components, which can be differentiated by units. Examples are vehicle or aircraft manufacturing but also the manufacturing of components like nuts and bolts. Contrary, process manufacturing works with indistinct units like water or oil. Those non-distinct products can be divided into any unit (Sage, n.d.). Hill (2017) in ARC Advisory Group states, “Process manufacturing utilizes chemical, physical and compositional changes to convert raw material or feedstock into a product ”, performing both continuous and batch processes. A hybrid industry includes a mixture of continuous, batch, or sequential and discrete processes (Hill, 2017).

Figure 6

Industry Overview Digital Enterprise Solution Portfolio Siemens



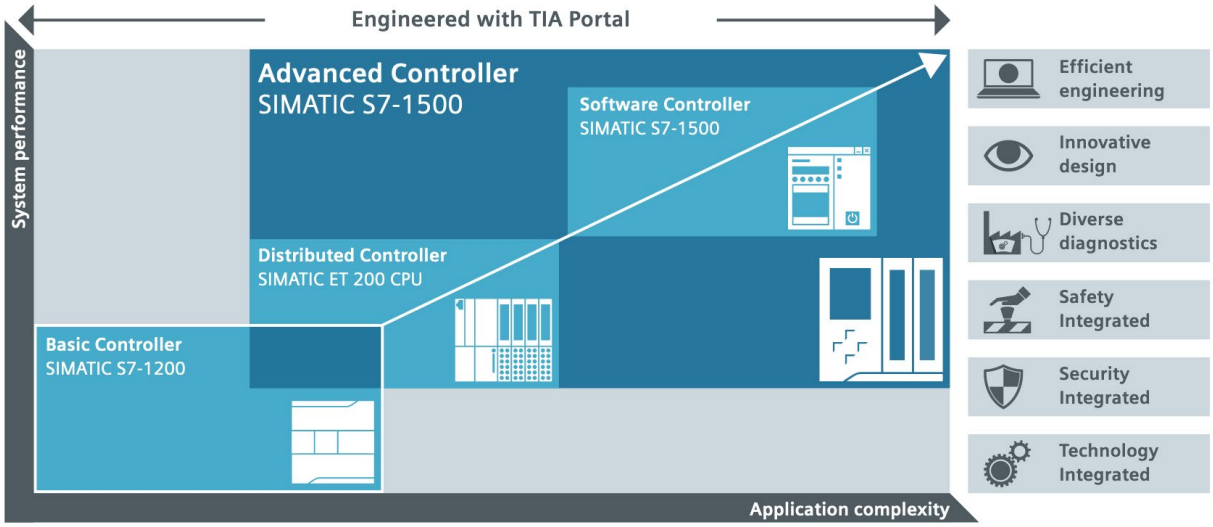
Note. Digital Enterprise industry overview Siemens. From *Industry overview* by Siemens, n.d., Digital Enterprise | Topic Areas | Siemens Global (https://new.siemens.com/global/en/company/topic-areas/digital-enterprise.html). Copyright 1996-2021 by Siemens.

Some of the SIMATIC controller applications are pumping and ventilation, simple controlling, simple closed-loop controlling, autonomously conveying, conveying and transporting, electrical charging, higher-level controlling, testing and measuring, model-based closed-loop controlling, assembling, cutting and sawing, and filling (Siemens AG, 2020b).

Each industry and application have specific requirements on the PLC. The SIMATIC product portfolio is shown in figure seven. Depending on the required system performance and application complexity, the product range extends from basic controllers, SIMATIC S7-1200, to advanced controllers SIMATIC S7-1500, classified into distributed and software controllers.

Figure 7

SIMATIC Controller Portfolio Overview



Note. Overview SIMATIC controller portfolio. From *Overview of the SIMATIC controller portfolio* by Siemens AG, 2017, Integrated functions in all SIMATIC controllers (https://assets.new.siemens.com/siemens/assets/api/uuid:c67e0a36-d9a5-4fbb-8704-a83eae40708e/version-of-dffa-b10100-02-controller8-seiter-1144dpi.pdf). Copyright 2017 by Siemens AG.

Lastly, the size of the relevant market is concurrently the global PLC market size. Appendix B visualizes the global PLC market was sized at USD 11.21 billion in 2020 and is expected to grow at a compound annual growth rate (CAGR) of 5.5% over the forecast period 2021 to 2026 to reach USD 15.58 billion by 2026 (Mordor Intelligence, 2021).

Goals of Segmentation Analysis

The first goal of this segmentation analysis is to find reasonable segmentation variables, which can be used for targeted market stimuli of Siemens SIMATIC controllers. Also, Weinstein (2014) states finding growth opportunities is a major objective of market segmentation analysis. Derived by the project objectives, the second goal of this segmentation analysis is to find growth opportunities for the redundant controllers in the U.S. As being a relatively new product to the U.S. market, the redundant PLC S7-1500R/H system is selected to identify target segments for this specific product family and replicate success and push sales in the U.S. (JW, Siemens Industry, Inc., personal communication September 11, 2020). Also, a recent release of a new version implementing new product features opens new opportunities and needs a market positioning.

Mora Cortez et al. (2021) found different authors have expressed that segmentation is purposive and context-dependent, thus the selection of the variables and segmentation method should reflect the problem to be solved.

B2B Market Segmentation

The following paragraphs describe how to identify market segments, introduce different segmentation approaches, and segmentation assessment as well as selection aka defining target markets summarized from B2B segmentation and targeting literature. Followed by applying

reasonable concepts and approaches for the segmentation analysis of Siemens SIMATIC PLCs focused on one specific product family, the redundant controllers S7-1500R and S7-1500H.

Identifying Market Segments

To identify market segments the B2B segmentation literature suggests different segmentation variables and systematic approaches or models, which can be utilized.

B2B Segmentation Variables. Considering several possible characteristics to define a market segment, the task is to find those key characteristics which cause similarities or differences in existing or potential customers' buying behavior. Table five summarizes different segmentation variables for B2B markets. Following the classification of Kleinaltenkamp and Saab (2009) segmentation variables can be clustered into directly or indirectly obtainable general, or buying specific attributes of the customer. Also, variables can be related to the organization or the DMU.

Table 5

Summary of B2B Segmentation Variables

	General attributes of customers	**Buying specific attributes of customers**
Directly obtainable	Organization: Size, Geographic location, Industry, NAICS/SIC code, Legal form, Financial restrictions, Organizational structure, etc.	Organization: New or existing customer, buying quantity/usage rate, end-user application, etc.
	DMU: Age, Qualification, Education, Seniority, Job responsibilities, etc.	DMU: Size and Structure, etc.
Indirectly obtainable/derived	Organization: Culture, Corporate philosophy, goals, structure of procurement (centralized/decentralized), purchasing strategies (single/multiple source), organizational innovativeness (innovator…follower), etc.	Organization: Procurement procedures, Product Requirements, brand-/vendor loyalty and attitude, sales funnel stage, etc.
	DMU: Personality traits such as risk tolerance, know-how, decisiveness, information behavior, confidence (high…low), etc.	DMU: Perceived importance of the purchase, Buyer expectations, Purchase motivations/Key Criteria, Buying decision criteria, Major decision participants, etc.

Note. Checklist of B2B segmentation variables. Summary from Backhaus and Voeth (2014), Hutt and Speh (2017), Kleinaltenkamp and Saab (2009). Adapted from *Industriegütermarketing: Grundlagen des Business-to-Business-Marketings (Industrial Marketing: Fundamentals of Business-to-Business marketing)* (p. 123), by K. Backhaus and M. Voeth, 2014, Franz Vahlen.

Due to the dependency on the marketing goal of segmentation as well as the differences in industrial markets, the table does not claim completeness but provides an overview of commonly used variables. Also, Weinstein (2014) expressed the importance of creative market definition of emerging or imagined markets.

Mora Cortez et al. (2021) found that segmentation according to industry or vertical segmentation is a leading approach. Since, in practice, customer needs might differ between industries, it is often equated with a needs-based segmentation. A needs-based segmentation means building customer clusters based on similar needs and benefits sought in solving a particular problem (Kotler & Keller, 2016). As such, it centers customers' needs and pain points. Likewise do approaches like the Jobs-to-be-done theory, developed by Christensen et al. (2016) as in part a complement of the theory of disruptive innovation, or the benefit segmentation, which is a terminology used by Haley (1968). In a nutshell, the jobs-to-be-done theory requires identifying the jobs the product is required to perform for the customer rather than focusing on a description of the customer attributes (such as age, demographics, etc.) and provides a direction for innovation. Identifying the job is an acronym "for what an individual really seeks to accomplish in a given circumstance" (Christensen et al., 2016).

Similarly, customer-needs-centered, benefit segmentation clusters customers according to benefits sought in consuming a product. However, the authors state that other segmentation variables are additionally useful after gaining an in-depth understanding of customers' benefits sought (Haley, 1968).

Several authors, such as Hutt and Speh (2017) and Weinstein (2011) suggest the North American Industry Classification System (NAICS) to gain valuable insights into industries and to target certain segments. Organizations in the U.S., Canada, and Mexico are grouped into

NAICS codes reflecting the primary product produced at this location (Hutt & Speh, 2017; U.S. Census Bureau, 2021). A research of existing resources at Siemens has supported this statement, since the NAICS code is used by external resources such as D&B Hoovers or IBIS, and hence braces the research and targeting process.

Besides, organizations can be clustered relating to their size and strategic importance (Mora Cortez et al., 2021). As a result, an organization might implement a Key Account Management, referring to "the process of planning and managing a mutually beneficial partnership between an organization and its most important customers" (Gartner, 2021b).

Selecting B2B Segmentation Criteria. While there are many possible variables to segment an industrial market, the challenge is to identify the reasonable ones to build and organize segments. Selecting one or more segmentation variables depends on the business needs and organization. However, the following criteria support the evaluation of the desirability of potential market segments:

- Measurability, requiring that the information about the characteristics of a particular buyer needs to be existent or obtainable to a certain degree,
- Accessibility, referring to the degree to which an organization can effectively use its marketing efforts on chosen segments. For example, a segment characteristic is only reasonable if marketing media or internal resources are available to target the segment accordingly,
- Substantiality, relating to the degree to which the segments are large and profitable enough to justify separate marketing activities. This also requires certain time stability of characteristics,

- Responsiveness, referring to the difference in segments' buying behavior and in their responses to different elements of the marketing mix (Backhaus & Voeth, 2014; Hutt & Speh, 2017).

However, the requirements often are in conflict, which can lead to challenges for practical implementation. For example, the DMU's attitude towards the organization ultimately affects the buying behavior and responsiveness, but the information is difficult to obtain and measure (Kleinaltenkamp & Saab, 2009).

Systematic Approaches. In addition to the introduced criteria measurability, accessibility, substantiality, and responsiveness, the literature suggests several systematic approaches to conduct a market segmentation, which can be categorized in different ways. First, the approaches can be differentiated between a build-up (aggregative) and a breakdown (disaggregating) approach (Mora Cortez et al., 2021). Mora Cortez et al. (2021) found that most aggregative approaches use quantitative methods such as conjoint analysis, cluster analysis, or benefit segmentation, which are often inspired by consumer marketing and criticized for not considering the practitioner, having complex data requirements, and fail to deal with the presence of a decision-making unit and networks in B2B markets. Contrary, qualitative methods generally suggest a breakdown approach, which clusters a pre-defined relevant market. Similar to Backhaus and Voeth (2014), this study distinguishes qualitative approaches between one-stage, multistage, multidimensional, and network approaches.

Network Approach. The network approach exceeds the classical segmentation approaches and takes the derived demand of a B2B market into account. Ultimately, the goal is a holistic market understanding by considering the needs of direct and derived customers as well as independencies within the network (Backhaus & Voeth, 2014). Accompanying, it aims to

answer the questions where the actual value is created as well as if intermediaries and end-users have different perceptions of what value is (Mora Cortez et al., 2021). Lastly, Sung Kwon et al. in McKinsey & Company (2014) state that new growth opportunities and segments can be found through value-chain partners (upstream and downstream) by partnering with customers or suppliers, that participate in adjacent market segments.

Concluding, network analysis is crucial to gain a holistic market understanding of complex B2B markets characterized by derived demands, to meet the different needs of value-chain partners as well use it as an opportunity to serve and get to know adjacent markets. However, sole use of this approach is insufficient. Rather, using the network approach first and integrate the findings in the segmentation and targeting initiative is recommended.

One-stage Approaches. Using one single variable to cluster a market for further decision-making is referred to as a one-stage approach, which is often done without conceptional reasoning. Eventually, each of the introduced variables can be used. While one-stage segmentation approaches can be useful, it generally does not justify the complexity of industrial markets (Backhaus & Voeth, 2014). Considering, the market and organization's structure, a one-stage approach does not serve the needs of this study to select target markets for Siemens controllers.

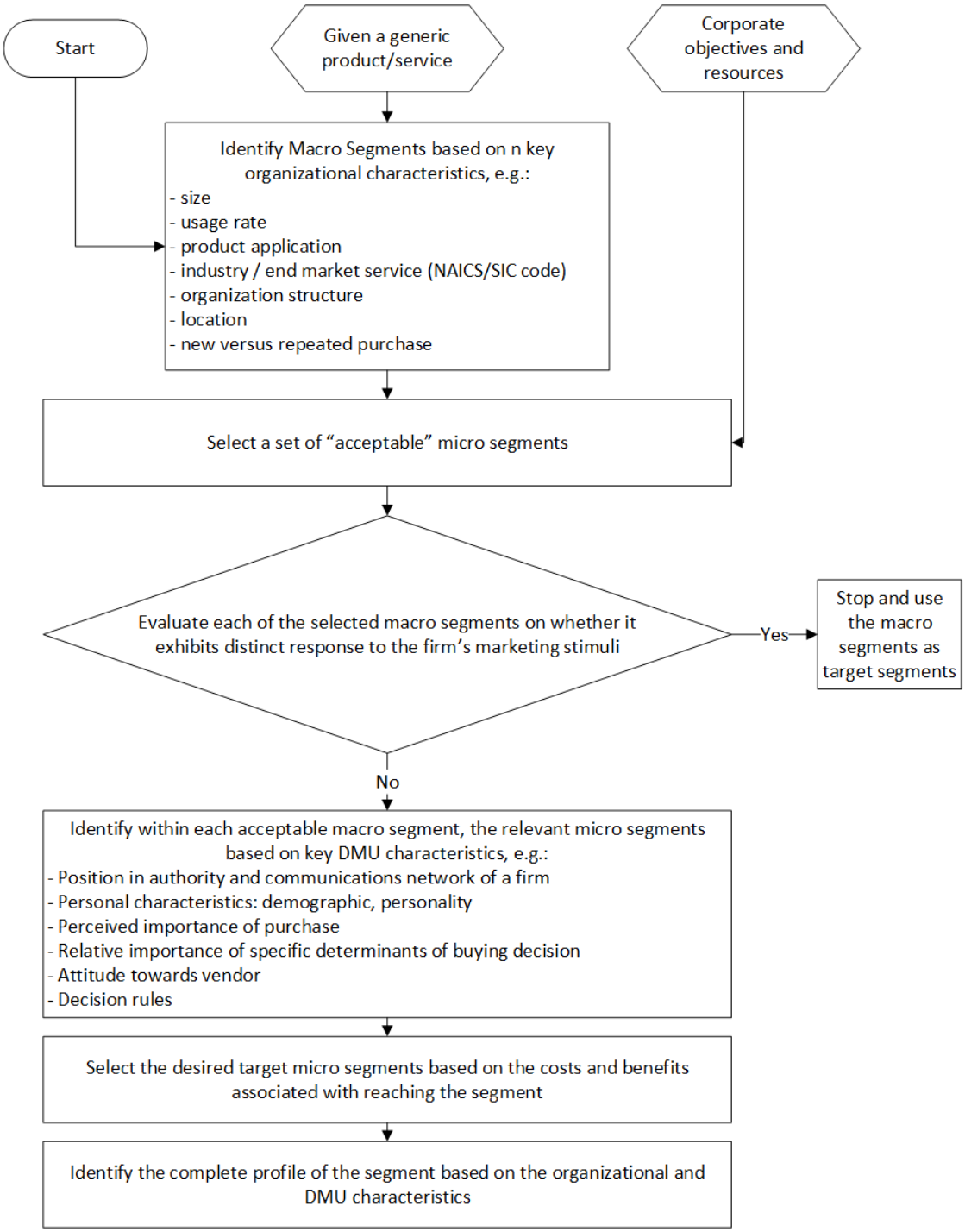
Multistage Approaches. Using multistage segmentation approaches**,** buying influencing factors are determined in a stepwise filtering process. One of the first multistage segmentation approaches was suggested by Wind and Cardozo as a two-stage approach, which is still present in today's B2B marketing literature, such as introduced by Hutt and Speh (2017) and Kleinaltenkamp and Saab (2009).

Illustrated as a flow chart in figure eight, Wind and Cardozo (1974) suggest a two-stage approach for industrial market segmentation. The variables are divided into macro- and micro-variables. A macro-segmentation “centers on the characteristics of the buying organization and the buying situation”. Contrary micro-segmentation focuses on “the characteristics of decision-making units within each macrosegment” (Hutt & Speh, 2017, p. 78).

Examples for macro-segmentation criteria are a demand organization’s size, geographic location, structure, industry, or buying situation, such as if it is a new or existing customer or a cross-selling purchase. If the macro-segments exhibit distinct responses to an organization's market stimulus, it is recommended to stop the segmentation process. If not, a further market division within each macro-segment is needed based on buying decision criteria of the DMU such as perceived importance of the purchase, or attitudes towards vendors (Backhaus & Voeth, 2014; Hutt & Speh, 2017). Choffray/Lilien (1980), Lilien/Kotler (1983) und Strothmann/Kliche (1989b), as cited in Backhaus and Voeth (2014), use similar two-stage approaches to segment a market.

Figure 8

Two-Stage Approach Industrial Market Segmentation



Note. Adapted from "Industrial market segmentation," by Y. Wind and R. Cardozo, 1974, *Industrial Marketing Management,* 3(3), p. 156. Copyright 1974 by Elsevier Scientific Publishing Company, Amsterdam – Printed in the Netherlands.

While the three-stage segmentation approaches are conceptually similar, three instead of two steps are performed. Table six points out that these approaches include a further segmentation of microsegments.

Table 6

Three-Stage Segmentation Approaches

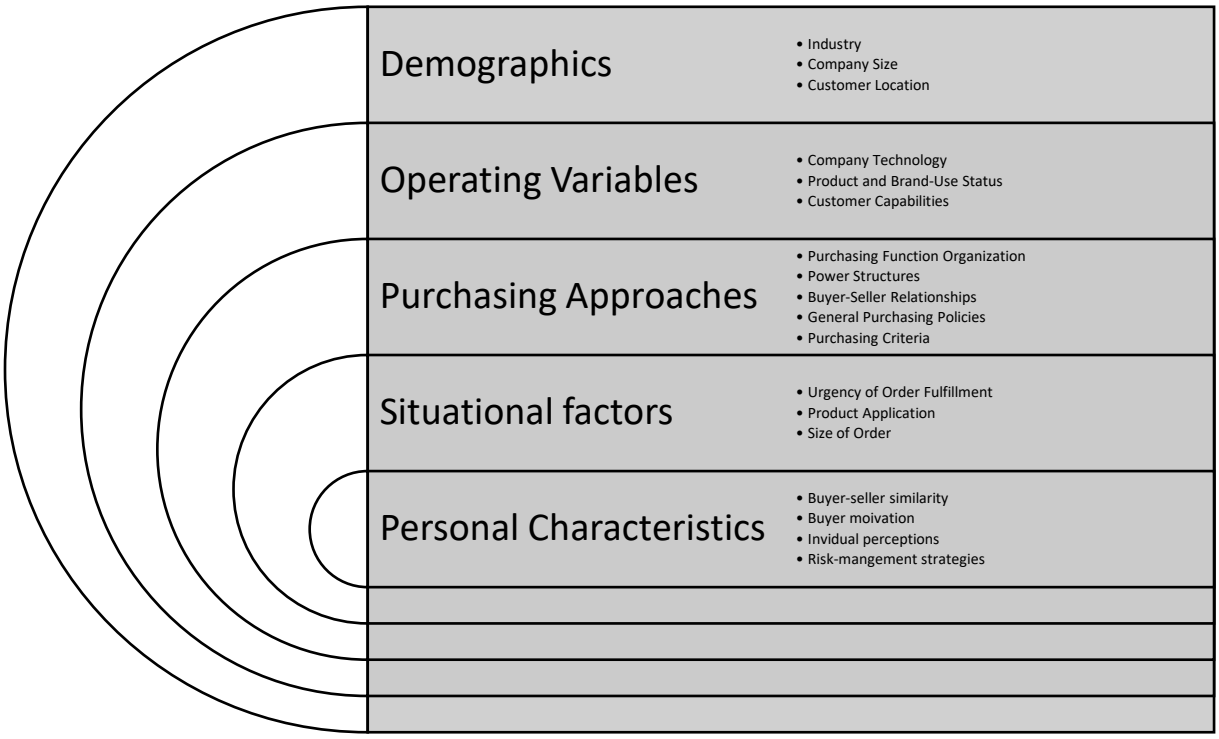
Scheuch (1975)	**Groene (1977)**
Level 1: **Environmental factors** - Demographics: Location, Type of organization, etc. - Use and purchase behavior: sales volume, payment behavior, etc. - Position of organization relating to political and technological factors	**Level 1:** **O-Segmentation (factors relating to organization)** - Demographics: Location, Type of organization, etc. - Institutionalization of the purchasing function - centralization/decentralization - remit, etc. - Organizational procurement rules - bid evaluation …- use of ERP system, etc.
Level 2: **Intra-organizational factors** - Organizational goals - Organizational constraints: Know-how, financial constraints, etc. - Hierarchical structure, etc.	**Level 2:** **K-Segmentation (characteristics of the decision making collective)** - Size of the DMU - Structure of the DMU, etc.
Level 3: **Characteristics of DMU members** - Age - Job title - Social class	**Level 3:** **I- I- Segmentation (characteristics of the individuum involved in decision making)** - Information behavior - Attitude, etc.

Note. Three-stage segmentation approaches of Scheuch (1975) and Groene (1977) as cited in Backhaus and Voeth (2014). Own translation from *Industriegütermarketing Grundlagen des Business-to-Business-Marketings (Industrial Marketing Fundamentals of business-to-business marketing)* (p. 126), by K. Backhaus and M. Voeth, 2014, Franz Vahlen.

Finally, a nested approach is one of the multistage approaches to segment a market, which consists of five stages (Backhaus & Voeth, 2014). The nested approach is an analytical tool built on and integrating previous approaches. Figure nine shows Shapiro and Bonoma (1984) identified five general segmentation variables and arranged them in five stages or a nested hierarchy. The variables are clusters into demographics, operating variables, customer purchasing approaches, situational factors, and personal characteristics of buyers.

Figure 9

Nested Approach to Segment an Industrial Market by Shapiro/Bonoma (1984)



Note. Adapted from *How to Segment Industrial Markets*, by B. P. Shapiro and T. V. Bonoma, 1984, Harvard Business Review (https://hbr.org/1984/05/how-to-segment-industrial-markets). Copyright 2021 by Harvard Business School Publishing.

It is suggested to start at the outside nest and move inward to sequential evaluate whether the level of detail is sufficient for the planned segmentation decision or not. For example, if sufficiently homogenous subgroups can be identified based on demographics, the segmentation process ends. If not, the subgroups are further divided using operating variables, customer purchasing approaches, etc. until the results are differentiated enough for the segmentation decision (Backhaus & Voeth, 2014). However, depending on the situation and the goal marketers might decide to start in one of the middle nests. Also, not every situation requires all five stages, and it is possible or even desirable to skip one or more stages if reasonable. But the authors note that a lack of data is not a valid reason for neglecting one or more stages (Shapiro & Bonoma, 1984).

All introduced multi-stage approaches are selective and characterized by their hierarchical or tree structure, except for the nested approach, which builds the transition to multidimensional approaches because the variables can also be used simultaneously in building segments (Backhaus & Voeth, 2014).

Multidimensional Approaches. Multidimensional approaches use the same variables as multistage approaches but avoid the hierarchical structure. The tree structure involves that the allocation of a company to a specific segment in a certain segmentation step cannot be reversed in subsequent steps. However, segmentation variables used at the first stages such as demographics often have less influence in the buying decision than criteria closer to the inner nest. Thus, the goal of multi-stage and multidimensional approaches is to avoid a one-sided focus on firmographics(Backhaus & Voeth, 2014).

As a result, “the art of market segmentation involves identifying groups of customers that are large and unique enough to justify a separate marketing strategy. The ultimate goal is to have

the greatest amount of difference between groups (segments) and high similarities within them" (Hutt & Speh, 2017, p. 76). The introduced variables and approaches can serve as a guideline and checklist as well as the criteria help to evaluate the desirability of potential market segments.

Overall, variables and models to segment a market vary from traditional approaches and using macro variables to integrated approaches such as the network approach and using micro-segmentation variables. Harvard Business School professor Clayton Christensen claims 95% of new product launches fail while the problem often is an ineffective market segmentation. Although Christensen refers an example of B2C business, segmenting the market for milkshakes, the takeaway applies to B2B marketing as well. Accordingly, the true reason behind a purchase are the jobs-to-be-done from the customer's point of view rather than where the customer is from or which product the customer buys (Nobel, 2011). As such the author questions traditional market segmentation and targeting models.

Overall, the trend goes towards highly targeted marketing strategies, thus including micro-segmentation variables in the segmentation process. The rise of Account Based Marketing (ABM) points in the same direction (Hutt & Speh, 2017). Gartner, Inc. defines ABM as "a go-to-market strategy targeting certain accounts with a synchronized, continuous set of marketing and sales activities", thus marketing and sales stimuli are set through all stages of the buying journey (Gartner, 2021a). As such one company is viewed as its own market or single segment (as introduced in Chapter 2). However, this approach can be expansive in requiring more marketing and sales resources than clustering customers in segments. Also, the jobs-to-be-done theory or benefit segmentation centers the customer needs, which should be included in a segmentation model. The downside of the jobs-to-be-done theory is the accessibility. For example, a cluster summarizing accounts in need for a redundant controller based on different jobs-to-done, does

not provide a foundation of market research such as the size of a segment or expected development and needs a good customer understanding, thus research resources and data accessibility. Contrary, a traditional approach for instance clustering accounts according to their NAICS code provides a great basis for identifying accounts and industry development.

Concluding for this study, an integrated approach using several segmentation variables to balance the advantages and disadvantages considering the goal to find new growth opportunities rather than clustering existing customers is desirable.

Segmentation Analysis Siemens Controllers

Considering the segmentation goal to find valid targeting variables to stimulate the PLC market and due to the complexity of the industrial PLC market, a qualitative segmentation approach is reasonable. Additionally, a quantitative approach requires complex data collection and availability leading to exceeding costs in relation to the benefits.

The author evaluates the different qualitative approaches for the Siemens segmentation and targeting research initiative. Leveraging the network approach and conducting a value-chain analysis is reasonable to gain a holistic understanding of the demand side of the market first. Next, the nested approach supports dividing the relevant market into subsegments for more differentiated target marketing activities. The one- to three-stage approaches do not justify the complexity of the market and organization. Besides, the nested approach builds the transition to a multidimensional cluster building.

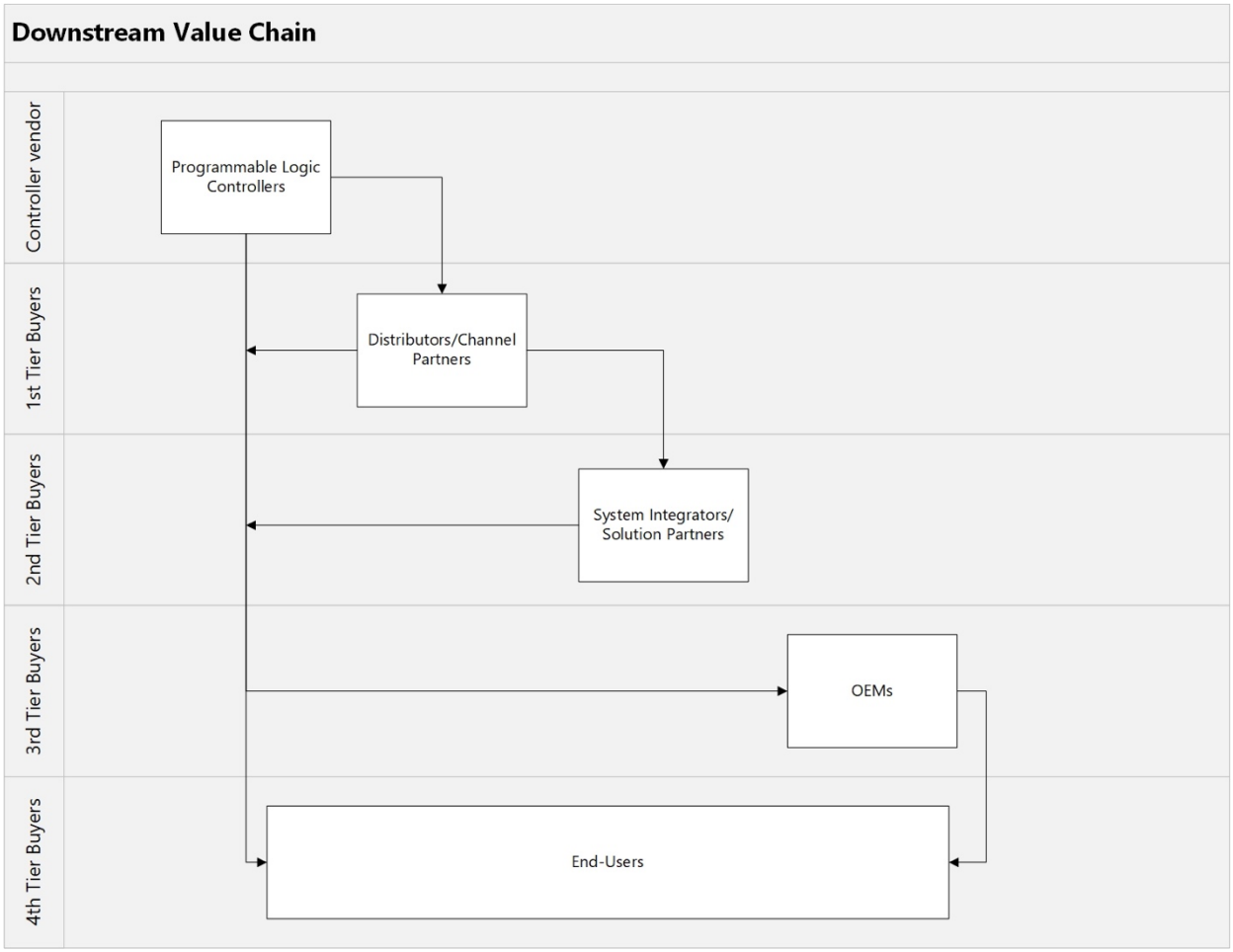
Downstream Value Chain Analysis

Because an understanding of the value chain is crucial in B2B markets, it is recommended to perform a value chain analysis as one of the first steps to derive key demand

drivers and decision-makers within the network as well as to include it in the segmentation model if necessary. Figure 10 illustrates a common downstream value chain structure of controller markets.

Figure 10

Downstream Value Chain Controller Market



Note. Downstream Value Chain of a controller market (JW, Siemens Industry, Inc., personal communication, May 20, 2021).

The direct customer can be a distributor, an OEM (Original Equipment Manufacturer), or an end-user (JW, Siemens Industry, Inc., personal communication, May 20, 2021). Ultimately an organization's sales and marketing program needs to justify all value chain partners to a certain

extent resulting in multistage marketing. By asking the questions which value chain partner decides on the controller to use and what are the key external drives for demand, the following key demand drivers were identified:

- end-user industry size and development
- technical requirements OEM and end-user application
- engineers' knowledge and familiarity with Siemens PLCs
- customer's internationality relating to the strong international brand awareness of Siemens

The value chain analysis makes clear that the overall demand is driven by the end-user. Therefore, the size and development of the end-user industry are identified as one key driver of demand. Next, the technical requirements and the PLC applications of the Original Equipment Manufacturer (OEM) or those of the End-User influence the product needs. For example, if the application requires high controller availability, it is more likely that a redundant controller is requested. Thus, the technical requirements of the end-user and the OEM influence the buying behavior. Because a controller serves in a highly technological environment, the engineers' knowledge, familiarity with Siemens PLCs, and ease of use play an important role. These aspects include all value chain partners, but especially system integrators, OEMs, and end-users. Lastly, the customer's internationality influences the buying behavior. While Siemens is a PLC market leader, not all U.S. prospects are aware and there is a strong brand loyalty towards a competitor. Thus, the product value proposition and solution brand awareness needs marketing attention in the U.S. market particularly (JW, Siemens Industry, Inc., personal communication, May 2021).

In discussions, Siemens (AC, Siemens AG, personal communication, June 18, 2021) states the importance to create product awareness at the end-user level, while a multichannel

approach is needed to market Siemens' automation solutions. As a result of the network analysis, this study focuses on end-users and OEMs to create PLC product and brand awareness at this level.

Segmentation Model

The author developed a segmentation model for Siemens SIMATIC controllers with a focus on redundant controllers. The study uses the nested approach of Shapiro and Bonoma (1984) as a conceptual framework and leverages a case study of Weinstein (2011), who illustrated a strategic segmentation process for Citrix Systems offering computer solutions in a high-technology market.

Considering the product and organization's structure as well as the segmentation goals, the segmentation variables as summarized earlier in this chapter and brainstorming led to a list of possible segmentation variables. The author developed an assessment matrix to evaluate the segmentation variables in a discussion with a marketing manager between highly desirable, moderately desirable, and lowly desirable (JW, Siemens Industry, Inc., personal communication, May 20, 2021). Using the same three levels of desirability, the author assessed the segmentation variables using the criteria measurability, accessibility, substantiality, responsiveness asking the question to which degree arising segments would be measurable, accessible, substantial, and responsive. Figure 11 shows the results.

Figure 11

Assessment Market Segmentation Variables

Market Segmentation Variables	Discussions	Evaluation based on Criteria			
		Measurability	Accessibility	Substantiality	Responsiveness
Product Use	+	=	+	+	+
Industry and Application	+	=	+	+	+
Organization Size	=	+	+	=	-
Organization Location	+	+	+	=	-
Organization Ownership	-	+	=	-	-
Structure of Procurement	-	-	-	-	=
Customer Type New/Existing	=	+	+	+	=
Organization Type	-	+	+	-	=
Jobs-to-be-done/Customer Pain Points	+	-	-	-	+
Buying Criteria	+	-	-	-	+
Value in use	-	=	-	-	-
Purchasing Strategy	-	=	-	-	-
Personal Characteristics/DMU Characteristics	=	=	=	=	+
Sales Funnel Stage	=	=	=	=	+
Type of Value Chain Partner	+	+	=	+	+

Degree of desirability for segmenation variables
+ Highly desirable
= Moderately desirable
- Lowly desirable

Accordingly, for the purpose of this study, the variables organization ownership and type, structure of procurement, value in use as well as purchasing strategy are neglected. Contrary, product use, industry and application, organization size, location, customer type (new versus existing customer), jobs-to-be-done and customer pain points, buying criteria, sales funnel stage, and type of value chain partner, as well as DMU characteristics need further investigation. While variables like personal attitudes of DMU members are valuable information, it is not included in

this segmentation model. Rather it is recommended to define those variables on a single customer base for important customers defined by the sales force.

Implementing categories from external or internal resources increases the degree of accessibility. For example, using the NAICS code for industries or using the job function classifications from LinkedIn. However, the criteria might contrast with each other. For instance, variables like product use or jobs-to-be-done have a high degree of responsiveness because they center the customer but are difficult to measure and access. Contrary, firmographics are easier to access and measure but might have a lower degree of responsiveness. Concluding, a mix is needed to ensure balanced segmentation variables.

Table seven indicates the segmentation consists of 16 variables grouped by firmographics, operating variables, purchasing approaches, situational factors, and personal characteristics of the buyer within the decision-making unit (DMU).

Table 7

Siemens SIMATIC Controllers Segmentation

Segmentation Variables	**Exemplary breakdown**
Firmographics	
Country	U.S., Germany, France, etc.
Size of Organization	Small, medium, large, etc.
Industry (NAICS, Siemens classification, LinkedIn classification)	Chemicals, marine, glass, food and beverage, electronics
Operating Variables	
Customer Type	New or existing customer
Application	Airport baggage handling, HVAC (ventilation, air treatment, heating), tunnel, water supply and filtering, etc.
Product use expressed by product family	Redundant controllers, open controller, etc.
Purchasing Approaches	
Type of downstream value chain partner	End-user, OEM, distributor, system integrator
Brand based key buying criteria	Service, Price, Quality, Functionality (HW and SW), etc.

Technology based customer needs	High availability, reduce production downtime, bumpless switchover, etc.
Customer product value proposition	TIA portal, price, service, etc. (related to pre-defined product family)
Situational Factors	
Sales Funnel Stage	Stage at customer decision journey: problem identification, research, consider and evaluate, RFP, etc.
Showing PLC Intent	Yes/No (leveraging external and internal resources)
Personal Characteristics Buyer within DMU	
Job Title	Production Engineer, Operations Manager, Automation Engineer, etc.
Job Function (LinkedIn)	Engineering, Supply Chain Manager, Purchasing, Project Manager etc.
Job Seniority (LinkedIn)	Owner, Manager
Years of Experience (LinkedIn)	

Note. Siemens SIMATIC Controllers Segmentation focused on redundant PLCs S7-1500R/H.

Firmographics. The first segmentation variable within firmographics is related to the organization's location. Country is a reasonable variable to use because the buying behavior of customers in the U.S. differs from, for example, Germany due to differences in brand awareness. Also, subsequent targeted campaigns focus on U.S. prospects only. Contrary, no differences between segments, which emerge by using region/state or city, arise.

Siemens controllers are sold in numerous countries. Recapturing the size of the relevant market, the global PLC market was valued at USD 11.21 billion in 2020 (Mordor Intelligence, 2021). For this study, the target market consists of the U.S. market share only. Further market data of the U.S. controller market are available within Siemens.

The organization's size is grouped into buckets in terms of the number of employees. Typical buckets used are small (<50 employees), medium to small (50-199 employees), medium (200-499 employees), medium to large (500-999 employees), large (1,000-4,9999 employees),

XLarge (5,000-10,000 employees), XXLarge (10,000+ employees) (Siemens Industry, Inc., 2021). A PLC customer can be small, medium, or large. Thus, the number of employees does not narrow the target market for all PLCs in the first place but the segmentation variable is relevant for subsequent steps.

Several clusters could be used for industry classification. Siemens states the industries of the digital-enterprise portfolio consist of chemicals, marine, glass, food and beverage, electronics, aerospace, automotive, water and wastewater, minerals, pharmaceuticals, batteries, wind, machine building, intralogistics, oil and gas, power and utilities, paper, tire additive manufacturing, cranes, robotics (See p. 49, Figure six). Also, the CRM system has implemented an industry classification. Next, using NAICS codes is valuable because it facilitates the demand research process such as in identifying industry trends or companies within each industry. Lastly, LinkedIn uses an industry classification which helps position the product with social media campaigns (Appendix C). Ultimately, although challenging, it is desirable to locate all relevant industry classifications for target segments, while impossible to use them completely superimposable.

Operating Variables. Applying the firmographics leaves many potential customers and the segments exhibit distinct responses to the marketing stimuli to a low degree only. Thus, further segmentation is needed.

First, the customer type referring to the differentiation between new and existing customers for Siemens is an operating variable to cluster the demand market for SIMATIC controllers. While it is important to further develop existing customers, this project is focused on targeting potential new customers. As of 2017, the global market share of Siemens was valued at

31% (Deutsche Bank Research, 2017). Thus, targeting new customers narrows the relevant global market by approximately 30%.

Next, it is important to understand the customer's applications to be able to address end-users' needs in marketing messaging. PLCs can be used in a variety of applications, resulting in different requirements in terms of the right controller within the PLC assortment. Depending on the application, a suitable PLC type can be recommended.

This leads to another important variable, which is defined as product use expressed by product family. Product family is chosen because it centers the customer's needs better than only considering a single product, while part numbers can still be evaluated and be compiled for the analysis of a product family. For further considerations, prospects for the redundant controllers within the S7-1500 advanced controller family were selected to target. With a definition of the target product family further segmentation variables, a more detailed description of application, technological customer needs are derived to integrate customer-centric variables.

Purchasing Approaches. Because the purchasing approaches and needs differ between partner types in the downstream value chain, this variable is needed to build four clusters, according to the previously conducted network segmentation. Those clusters are Distributors, System Integrators or Solution Partners, OEMs, and End-Users. Also, brand-based key buying criteria differ by customers. It is crucial to know why customers chose Siemens SIMATIC controllers over a competitor's solution. At this level, key buying criteria are related to criteria applicable to all Siemens SIMATIC controllers, including price, quality, brand awareness, service (including service support and product lifetime), as well as technology and functionality (Hardware and Software set up, including TIA portal). Concerning targeting different customers in the value chain, the author refers to two Siemens internal reports for further details describing

the customer pain points and target audience of end-users, OEMs, and system integrators as well as purchasing criteria of OEMs and end-users.

While distributors and system integrators are certainly important to support with information and services, relating to the goal of this segmentation process and the results of the value chain analysis, new OEMs and end-users are the clusters to target in terms of messaging.

The next variable related to the product family is technology-based customer needs. Technology-based refer to customer needs, which are interrelated to the pre-defined product motivation. Leveraging the jobs-to-be-done theory it answers the question of why a customer needs a redundant controller or in other words what jobs the controller must fulfill for the customer. Some technology-based customer needs are summarized from internal discussions and a review of documentation (personal communication, Siemens Industry, Inc., 2021):

- Need for redundancy to prevent damages and save on follow up costs
    - Prevent data loss in the event of failure
    - Prevent plant down time
    - Prevent and save on maintenance, e.g. operations without persons locally such as for offshore applications
- Need for high system availability
- Aims to increase efficiency
- Aims to reduce insurance costs
- If redundancy is required by law
- Application requires a bumpless switchover, small interruption time, quick system recovery
- Environment requires great distances between CPUs

- Application requires high signal volumes

Breaking down redundancy to the manufacturing industry, it is specifically valuable for organizations if the costs for unplanned manufacturing downtime caused by PLC failure are higher than additional costs for redundancy. Organizations utilizing batch manufacturing, in process industries, or operating in sensible, 24/7 manufacturing lines are possible target customers. Also, this product family is interesting for organization having a high risk for damages in the event of PLC failure for example if the processed products cause danger in industries like oil and gas or chemical. Thus, organizations having a high need for safety and reliability are target customers.

Lastly, the perceived value proposition is a cluster to use, which should be adapted to customer or segment needs. While the technology-based customer needs focus on the jobs-to-be-done, the product value proposition takes the benefits the customer gets and a differentiation to the competitors into account. As such, the customer value proposition builds the basis for a strong messaging, together with technology-based customer needs and brand-based buying criteria.

Building a customer value proposition for the redundant controller family, following features elaborated by reviewing internal documentation, presentations, and by discussions are to be highlighted (personal communication, Siemens Industry, Inc., 2021). Some features are specifically applicable to the redundant controllers. Other functions are integrated in several PLCs of the portfolio while concurrently contributing to the redundant controller value proposition. As being a standard OTS (Off the shelf) redundant solution, it increases engineering efficiency because no additional programming is required. Also, the redundant controller can be virtually simulated with S7-PLCSIM Advanced. Extensive simulation of functions, testing and

validated in the context of a plant or machine are possible without hardware, thus before the actual implementation or change of hardware. The S7-1500 controllers can be used with the Technology Module Multifunctional Platform (TM MFP), which allows the integration of various independent applications and edge computing. Failsafe functionality ensures integrated safety and high-level security know-how and copy protection. Finally, the Siemens Totally Integrated Automation Portal (TIA Portal), an automation software and common engineering platform provides the user with unrestricted access to digitalized automation services. It supports system integrators, machine builders, and end-users with digital planning, integrated engineering, and transparent operation (Siemens, n.d.-b, 2019; Siemens AG, 2017). Overall, the redundant controllers are in their early stages as being relatively new to the market and still developing into full functionality. As of today, they differentiate from competitors' products by the price point and some technological features. As the product further develops, the product value proposition needs to be updated.

Situational Factors. Two situational factors are integrated into the segmentation model. First, potential customers can be classified according to the sales funnel stage. For this study, customers at the top of the sales funnel are to target.

Additionally, potential customer at the top of sales funnel can be further distinguished in showing PLC buying intent or not. The customer needs and marketing stimuli should be distinguished according where they are at in the decision-making journey. Potential PLC customers showing intent can be identified and have a higher likelihood of responding to the marketing stimuli since they are already actively investigating the topic. Those potential customers can be defined from several internal and external resources. Besides, existing leads identified through previous marketing activities such as webinars attendees, lead data collected

through digital campaigns for example through downloading a marketing content or tradeshows and fairs are another cluster to focus on.

Personal Characteristics DMU. The fifth level consists of personal characteristics of the buyer or the decision-making unit (DMU). An already existing list of job titles is used as a basis applicable for all SIMATIC controllers divided by OEM and end-user job titles as illustrated in Appendix D.

Finally, three additional LinkedIn-specific segmentation variables are integrated, also due to the focus on digital marketing. LinkedIn allows to highly personalize campaigns with variables like job function, job seniority, and years of experience, amongst others. Besides, there are several other attributes such as location and language to target US customers only or even specific customer names. A document from LinkedIn Corporation (n.d.) "Mastering Targeting on LinkedIn" provides additional LinkedIn targeting information. LinkedIn classifies job titles in different Job Functions. A list of job functions is provided in Appendix E. It is recommended to use these buckets to not miss specific job titles. Companies use different job titles and descriptions, which lead to different job title descriptions in LinkedIn as well. When creating a LinkedIn profile, the job title description is not standardized. Contrary, the job function for target marketing campaigns is. Thus, using the job functions to cluster potential customers helps to not miss any job titles.

Next, a combination of job seniority and years of experience is recommended to further narrow down the LinkedIn targeted marketing campaign. A list of job seniority classifications is provided in Appendix F. The years of experience attribute allows targeting employees with a specific number of years of overall professional experience (LinkedIn Corporation, n.d.). As such the probability to reach the decision-maker increases.

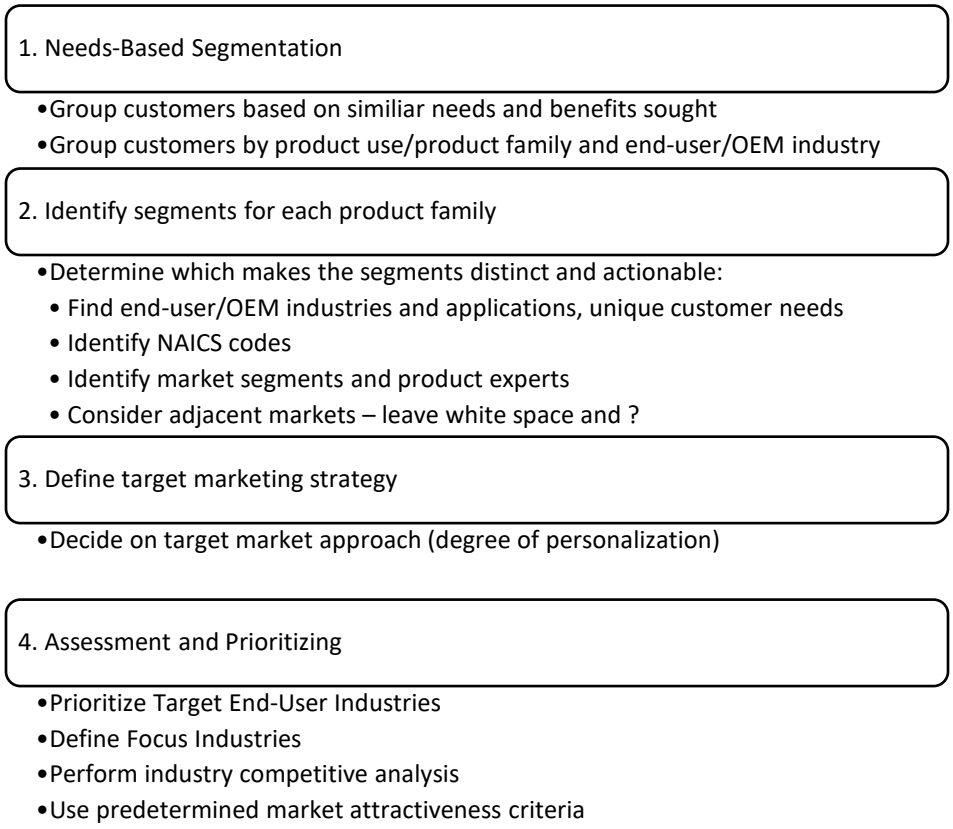
In discussions with a Siemens marketing manager (JW, Siemens Industry, Inc., personal communication, June 2021) job functions and job seniority to target in LinkedIn were defined. The clusters to target are marked yellow in Appendix E and Appendix F.

Needs-Based Segmentation for Redundant Controllers

Further investigations are needed to derive and access markets for specific product families. The nested approach as well as other well-known segmentation models such as micro- and macro-segmentation start of a pre-defined existing relevant market. While this is a good starting point, Mora Cortez et al. (2017) found that some authors challenge this assumption because of the active influence of multiple actors within the markets. Contrary, a needs-based based segmentation emphasizes customer's needs and benefits sought in solving a particular consumption problem because it starts with grouping the customers accordingly (Kotler & Keller, 2016). Also, it can facilitate finding new growth opportunities in adjacent markets. Leveraging the needs-based segmentation and jobs-to-be-done theory, grouping the customers according to the product use is reasonable. Further distinguished can be made by grouping the customers according to their industries. Figure 12 outlines subsequent steps.

Figure 12

Steps in the Needs-Based Segmentation Process



Note. Steps in a needs-based segmentation process. Adapted from R. J. Best as cited in Marketing Management (p. 263), by P. Kotler and K. L. Keller, 2016, Pearson Education. Copyright 2016, 2012, 2009 by Pearson Education, Inc.

Identification of End-User Industries and Applications. Generally, the redundant controller can serve the needs of many industries and applications. However, a closer look into industries that are more likely to buy this unique type of controller is reasonable concerning target marketing. Potential end-customers are end-users and OEMs needing PLC redundancy. The first question to ask are what is the motivation to buy a redundant controller. Siemens AG (2018) states "the SIMATIC S7-1500 Controller family is being extended by redundant CPUs for applications where controller availability is of greater importance". Also, "these CPUs are

available in two versions. SIMATIC S7-1500R for applications focusing on redundancy of the CPUs, for example, to avoid data loss in the event of a CPU defect. SIMATIC S7-1500H for higher-value applications with greater configuration limits and higher requirements on the switchover time and performance". Siemens (2021c) identified different motivations of the product: Prevent plant downtime, prevent damages, prevent data loss, prevent and save on maintenance, which ultimately decrease costs.

On that basis, the next step is to identify possible applications and end-user/OEM industries. Additionally, previous considerations about technology-based customer needs facilitate the subprocess of brainstorming possible application areas. Several resources can support this critical step. Those comprise further investigations into the PLC industries, including

- Pre-defined Industries for Siemens Digital Enterprise Portfolio
- Segmentation Benchmarking
- PLC Intent Data.

Second, a more specific review of existing opportunities and past sales data of the S7-1500R/H system redundant or similar products where a need for redundancy and high availability can be derived. Resources include the CRM system and POS data.

Third, a review of R/H-specific product presentations and discussions with Siemens product and market experts are valuable inputs for a comprehensive list of industries and possible applications.

Narrow down from the PLC Market. Recapturing figure six of the current state analysis, pre-defined industries are classified between process, hybrid, and discrete industries. Siemens Industry, Inc. claims redundancy and high availability are rather needed in process and hybrid industries (PC, Siemens Industry, Inc., personal communication, July 1, 2021). Next,

leveraging segmentation benchmarking, Rockwell Automation, Inc. (2021) states “We have the expertise to meet your unique industrial automation challenges anywhere in the world” and lists several industries on its website (List of industries see Appendix G). Also, Siemens works with a company Bombora, which is a provider of B2B intent data (Bombora, 2021). A business’ web content consumption is collected about interests in a particular topic such as Programmable Logic Controllers, thus collected company data indicate potential interest in that topic. The author reviewed a list of 245 company names that show PLC intent according to the list provided within a timeframe of six weeks. However, this analysis is timely bounded and a review on a regular basis is recommended.

Analysis of Past Sales Data and Opportunities. Some industries and applications can be identified through a review of existing opportunities and point of sales data. Because the product is relatively new to the US market a review of opportunities at HQ provides a broader database. However, due to the derived demand as well as limited information about the final application, not every transaction includes information on the application and end-user/OEM industry. While the CRM system is a great tool to analyze information, it is heavily dependent on the data quality. Lastly, historical data might not reflect all markets and misses future markets or markets which can be served with an updated version for example.

Identification of S7-1500R/H Industries and Applications. On that basis, a list of industries was developed and reviewed with market and product experts at Siemens. While some industries such as tunnels can be named specifically, there are others that are relevant, but difficult to build further subsegments. For example, the chemical industry needs further investigations for a more detailed description. The pre-defined product motivation should still be guideline and due to the high dependency on customer requirements, many organizations

utilizing automated control can leverage a redundant controller. Often the customer requirements, including the utilizing a redundant system, need to be clarified through personal communication with the customer. However, the industry list provides an overview of which industries are more likely in need of redundancy and high availability than others. A continuous review to further narrow down broadly defined markets and to locate adjacent markets is crucial. Also, upcoming product updates can open doors to new markets. A continuous review can be supported by the CRM system using a dashboard, which requires previous data collection. Therefore, it is recommended to compile information on the end-user industry and application in the CRM system. Further discussions follow in chapter five.

After a list of industries is developed, each subsegment needs a description of what makes the segment distinct and identifiable (Kotler & Keller, 2016). The identification of a NAICS industry is helpful for further industry research, including market revenue and growth, structure, major companies, amongst others. Due to the limitations of this study, following steps are described exemplary based on the segment infrastructure.

Conducting an expert interview (KS, Siemens Industry, Inc., personal communication, June 28, 2021) applications or subsegments within the segment infrastructure were identified. The technical requirements differ per application and can be clustered into a need for either redundancy or high availability. Table eight summarizes main applications for a redundant system within the segment infrastructure.

Table 8

Applications and Technical Requirements Infrastructure

Applications	Motivation to buy
Tunnels	Mainly High availability
Movable Bridges	Mainly High availability
Rail Transport (Train/Metro/Subway/Streetcar) – on board controls	Mainly High Availability
Rail Transport (Train/Metro/Subway/Streetcar) – on track controls	Mainly Redundancy

Define Target Marketing Strategy

Having a list of industries at hand, the question how to target those industries is investigated. Recapturing the different targeting strategies including undifferentiated, differentiated, single segment, or segment-of one strategies, a differentiated strategy is used for Siemens controllers. However, a segment-of one or a personalized marketing strategy broken down to a single customer can be beneficial for highly profitable existing or potential customers.

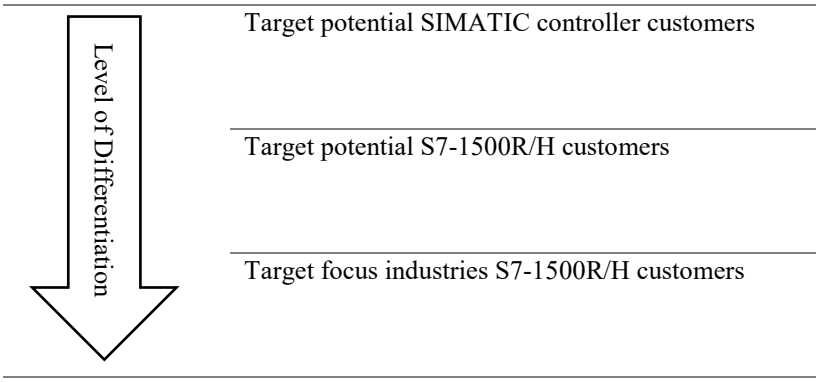
The first goal is to create S7-1500R/H product awareness on a less personalized marketing level. Most importantly, the redundant system can be valuable for many different industries, which is not necessarily a niche market and difficult to thoroughly narrow down. Rather, the product value proposition needs to be positioned to different industries through marketing and sales activities focusing on the customer's jobs-to-be-done utilizing a redundant system. Also, this approach supports gaining further knowledge about industry and application specific needs.

Second and concurrently, a more personalized marketing approach focused on prioritized industries for further customization and personalization is recommended. As a result, while dealing with limited marketing resources, the goal is to create product awareness in a broad

range of end-user and OEM industries, gaining an in depth-understanding of most attractive industries to initiate more personalized application or even customer-focused marketing and sales campaigns. Overall, three targeting differentiation levels are identified, including first a promotion of all SIMATIC controllers, second promotion of a specific product family, and third a promotion to target focus industries as illustrated in figure 13.

Figure 13

Illustrated Target Marketing Strategy Levels S7-1500R/H



The messaging at all three levels should focus on customer benefits and applications utilizing a SIMATIC controller, the redundant system, or the redundant system utilized in the focus industry.

For this study, a review of the industry list with Siemens' marketing, business development and product managers resulted in a prioritization of industries. Four focus industries were selected. Thus, the decision is made based on expert judgement. Further investigations are recommended to analyze and evaluate the industries. Following subchapter investigates B2B segment assessment and prioritizing.

B2B Segment Assessment and Prioritizing

To measure a market segment's attractiveness and choose the market segments with most potential, key discriminating criteria have to be carefully assessed and weighted (Weinstein, 2014).

Segment Attractiveness Criteria

Those criteria can be quantitative or qualitative and the assessment should consist of both. Table nine summarizes possible segment attractiveness assessment criteria. Sales, profits, market share, growth rates, and other financial measure are quantitative criteria. Qualitative indicators include an assessment of the industry structure or strengths and weaknesses, geographic coverage, market trends, or strategy synergy such as the ability to use existing distribution channels, amongst others.

Table 9

Summary of Possible Segment Attractiveness Criteria

	Criteria for assessing and choosing target markets
Quantitative	Sales (Sales quantities and turnover) Profit (includes segment relating costs, such as for accessing a new market) Achievable price level Market Size or Achievable Market share Growth rates Other financial measures • Break-Even-Points • Customer Lifetime values • Net Present Value • Return on Investment • Etc.
Qualitative	Nature of business preferred Assessment of Strength and Weaknesses or Industry Structure Geographic coverage Degree of customers loyalty Market Trends Ease of segment access Product differentiation Strategic Synergy - Ability to use existing distribution channels - Build on existing process strengths or capitalize on excess factory capacity -within segments Competitive intensity in segments Likelihood of value proposition Likelihood customer satisfaction/Unmet customer needs

Note. Summary of possible segment attractiveness criteria from Adams (2017), Kleinaltenkamp and Saab (2009), Weinstein (2014).

A research of Weinstein (2014) explored ten target market selection criteria concerning their importance for B2B technology marketers. Appendix H indicates, the selection criteria are ranked according to the author's research participants received importance (most important to less important) include opportunities in the industry, sustainable differentiated advantage, profitability, product differentiation, customer satisfaction, market size, ease of access of business, market growth, sales volume, competitive rivalry.

Methods to Analyze an Industry

Besides, the literature suggests different frameworks and methods to analyze industries and an organization's competitive environment and advantages. Among the most popular methods are SWOT, Porters Five Forces, and PEST analysis.

The acronym SWOT analysis stands for an evaluation of a company's strengths, weaknesses, opportunities, and threats to monitor the internal and external marketing environment (Kotler & Keller, 2016). Hereby, the analysis can be done on different levels, including the company, the business unit's, or product line to assess the performance, competition, risk and potential (Kenton, 2021). Opportunities and threats refer to key external macro-, and microenvironment forces, that affect the business. Contrary, an analysis of strengths and weaknesses focus on the internal environment in other words it assesses the ability to take advantages of attractive opportunities (Kotler & Keller, 2016). As such SWOT provides a useful planning tool to guide a strategy meeting. However, Kenton (2021) names a valid limitation that categories are not prioritized and each point listed not weighted. Thus, a sole use is not recommended, rather a SWOT analysis is valuable as one of several planning tools.

A PEST analysis is commonly used in conjunction with a SWOT analysis, to analyze a business' environment, including political, economic, social, technological factors. Another

version is PESTLE analysis, which includes additional aspects with legal and environmental factors. Thus, it can be used to recognize and capitalize existing and future opportunities and challenges (Kenton, 2020).

Lastly, Porters five forces is a widely used framework to identify an industry's structure and derive corporate strategy. Porter (2008) identified five forces that shape industry competition, as well as its attractiveness and profitability. The five forces include the rivalry among existing competitors, the threat of new entrants, the bargaining power of suppliers and buyers, as well as the threat of substitute products or services.

Porter's Five Forces S7-1500R/H Infrastructure. While SWOT and PESTLE are valuable tools, this study uses Porter's five forces, because this tool focuses on the industry structure, which is most relevant for further evaluations. Following paragraphs map the SIMATIC controllers focused on the redundant system S7-1500R/H in the U.S. in the infrastructure sector.

First, the rivalry among existing competitors, which is the center of Porter's framework, is analyzed. Mordor Intelligence (2021) states the PLC market is highly competitive. According to Deutsche Bank Research (2017) major competitors followed by global PLC market share as of 2017 are Rockwell (22%), Mitsubishi (14%), Schneider (8%), Omron (6%), B&R (4%), GE (3%), ABB (2%), and others (10%). Siemens was rated with a market share of 31%. Thus, there is a small number of major players that dominate the industry with a high four-firm concentration ratio of 75% as well as Siemens and Rockwell having over 50% market share globally. Besides, new companies are growing in the PLC market (Mordor Intelligence, 2021). Those numbers reflect a global as well as overall PLC

view. North America is estimated to grow at a high growth rate between 2019-2024 (Appendix I) (Mordor Intelligence, 2021).

Taking a closer look at the redundant system, competitors offer similar redundant system (personal communication, Siemens Industry, Inc., May 20, 2021). An email interview was conducted with a Siemens distributor using competitor's PLCs and the Siemens products to gain a better understanding about the competition in the infrastructure sector (Interview questions in Appendix J). Accordingly, one competitor is assessed as strong competition in the U.S. Both systems Siemens' S7-1500R/H and the competitor's product fulfill the technical requirements in the infrastructure sector. In the U.S. the competitor has a strong brand loyalty. Moreover, there is a barrier for users utilizing a competitor's system to learn something new. On the one hand this lowers the barriers to exit for existing customers. But on the other hand, it is more difficult to acquire competitors' customers. As a result, the messaging should emphasize the ease of use and the strengths of the TIA portal, amongst other content developed through the product's value proposition. Another goal derived is to reach customers, that have not utilized a PLC system yet as early as possible in the buying journey.

In conclusion, the rivalry can be assessed with a score of medium. While the industry is growing with a high concentration rate, the competition is strong having a high brand loyalty and comparing favorably to Siemens, judging based on redundancy performance (Distributor Siemens Industry, Inc., personal communication, July 2, 2021).

Next, the threat of new entrants can be considered as low to medium. The PLC market, including the redundant PLCs is highly technological and access to distribution channels as well as industry know-how needed. Thus, investment a potential new entrant must make is relatively high. However, while it is not easy to enter the PLC market, automation is an

attractive growing industry. Also, a research of Mordor Intelligence (2021) concluded that new companies are growing in the PLC market.

The bargaining power buyers is considered medium to low in the sectors tunnels, and bridges. Having a low concentration rate, those industries consist of many companies. If they already use a competitor's system, the switching costs are low. However, if not the barrier to learn something new exists which favors the system the customer already knows. Contrary, the rail transport consists of a few companies only, which increases their bargaining power to be high.

Following paragraphs shortly summarize the identified subsegments and NAICS industries for the sector infrastructure (see table 10). For a detailed industry analysis, IBIS and other external sources provide reports based on NAICS codes.

Table 10

Subsegment and NAICS Codes Infrastructure

Tunnels	23799 Heavy Engineering Construction OD4654 Specialist Industry Report Tunnel Construction
Bridges	23731B Bridge & Elevated Highway Construction
Rail	23799 Heavy Engineering Construction 48211 Rail Transport

Overall, the infrastructure demands are expected to grow because of the expected infrastructure upgrades in the U.S. (Tankersley, 2021). Brocker (2021) states the latter and expected investments in energy-efficient technologies is anticipated to stimulate the demand for industry products and the electrical manufacturing industry.

According to Madigan in IBISWorld (2021b) the Heavy Engineering Construction industry in the U.S. is estimated at $26.5BN as of 2021 and expected to grow at an annual

growth rate of 1.9% from 2021-2026. Thus, it presents an opportunity due to high revenue growth. The segment tunnel construction is estimated at a market share of 1.2% and mass transit and railroad construction at 47.8%. The public sector accounts for 75.2% of total revenue and includes municipal, state and federal agencies. The private sector accounts for 24.8% and includes organizations in water transportation, land transportation, athletic organizations as well as power and utilities industries (Appendix K.). While there are no major players in the industry and operatos' market share tends to swing due to volatitlity of projects, Madigan in IBISWorld (2021b) names companies and market shares as follows: Bechtel Corporation (4.7%), AECOM (4.6%), Fluor Corporation (4.1%), Jacobs Engineering Group Inc. (0.6%).

According to an IBISWorld report on tunnel construction specifically, the tunnel construction industry accounted for $3.7BN revenue with an estimated annual growth rate of 0.3% between 2020 and 2025 and 640 businesses. Hereby, the market is segmented by 77.7% for new construction, 10% for repair and maintenance, and 12.3% others. End-users of new constructions are primarily highway and rail others include sewer tunnels, water tunnels. Cable tunnels, and scientific tunnels. Again, the projects are mainly funded by the government, including state government (37.5%), local government (33.5%) and federal government (22.0%). The private sector is estimated accounting for a market share of 7%. Appendix L illustrates business concentration in the U.S. generally driven by population and vehicle concentration but also according to topography. Companies (followed by market share) in this sector include Tutor Perini Corp. (2.0%), Kiewit Corp. (1.8%), and Bechtel Corporation (1.6%) (Madigan, 2020).

While the Bridge & Elevated Highway Construction report new work (6.2%), alterations and additions (50.8%), as well as maintenance and repairs (43%) of bridges and elevated highways, it excludes highway construction activity. The past five years the industry declined at annual growth rate of 1.7% to $17.7BN revenue but is expected to grow likewise at an annual growth rate of 1.7% in the upcoming years 2021 to 2026. The market is segmented into state and local public sector (63.4%), federal public sector (27.3%) and private sector (9.3%). Again, the market share is volatile due to company's project workload. Companies in this sector are Kiewit Corporation (3.0%), Walsh Group Ltd. (2.7%), Skanska USA Inc. (1.8%), American Bridge Company Inc. (1.6%) (Madigan, 2021a).

Lastly, Cook in IBISWorld (2020) published a report about the industry Rail Transport in the U.S., which "includes large railroads (Class 1 railroads) and regional and local line-haul railroads that carry freight and passengers" but excludes "scenic and sightseeing rail transportation, street railroads, commuter rail or rapid transit". In 2020, this industry accounted for a revenue of $66.3BN, operated 583 businesses, and was expected to grow at an annual growth rate of 3.6% from 2020 to 2025. Contrary to the other industries, the rail transportation industry has a high concentration rate consisting of four major players accounting for more than 85% of total industry revenue: Burlington Northern Santa Fe LLC (30%), Union Pacific Corporation (28.5%), CSX Corporation (15%), and Norfolk Southern Corporation (14.3%).

The threat of substitute products outside the automation product portfolio is assumed to be low given the fact that the customer is in need for automated process controls. However, there are different ways to implement redundancy. Thus, there are possible substitute products within the automation portfolio depending on the customer needs. Lastly, while the bargaining power of

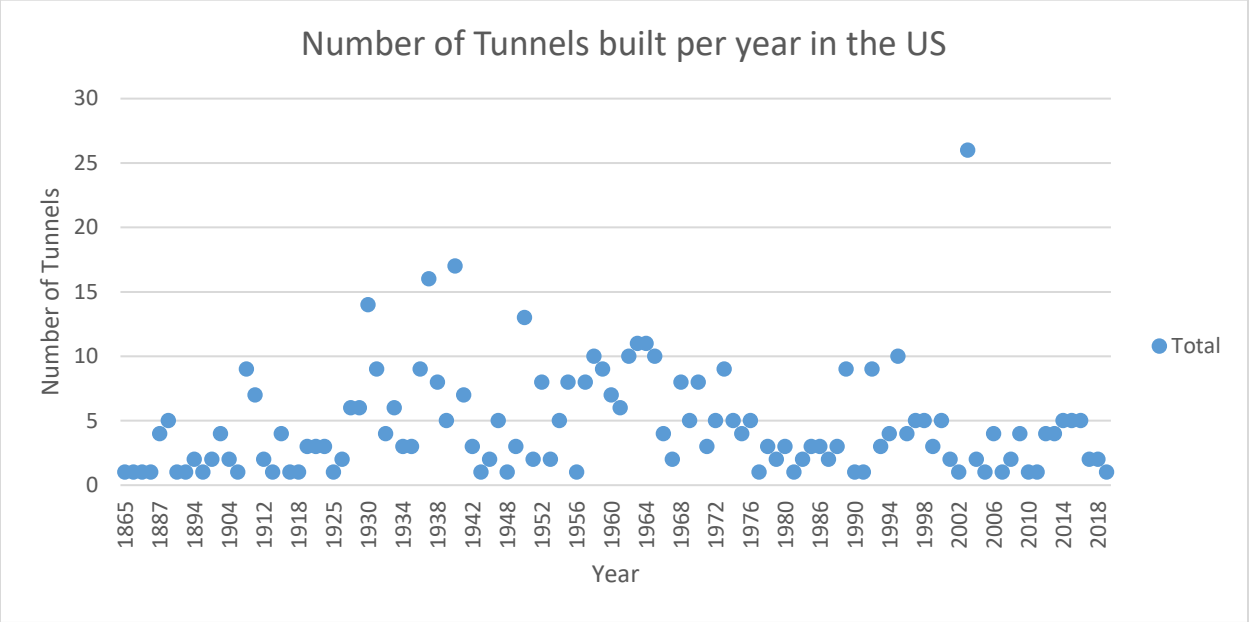
suppliers is an important part of the five forces analysis, it is outside the scope of this study and relevant for analysis for redundant controllers independently of the end-industry.

Market Share. The development of the end user industries indicates a growth or decline, but an existing or potential market share within an industry is another important factor to look at. Currently, the actual market share or current segment size in revenue can be defined by manually evaluating sales data collecting information about the applications via contacting sales representatives and market segment experts. For assessing the potential and achievable market share, the application tunnel accompanied with the question of how many tunnels were built in the U.S. per year is investigated.

According to tunnel inventory data from the U.S. Department of Transportation Federal Highway Administration the US counts 526 tunnels (U.S. Department of Transportation Federal Highway Administration, 2020). Evaluating the tunnels built per year over the last 20 years, an average 3.9 tunnels were built per year in the US between 2000 and 2019. Figure 14 indicates an outlier with 26 tunnels built in 2003. Excluding the year 2003 results in an average of 2.6 tunnels per year.

Figure 14

Number of Tunnels Built per Year in the U.S.



Note. Data analysis and representation of U.S. tunnel inventory data submitted annually to the Federal Highway Administration by the States, Federal agencies, and Tribal governments in accordance with the National Tunnel Inspection Standards and the Specifications for the National Tunnel Inventory. Adapted from *2020 National Tunnel Inventory (NTI)*, by U.S. Department of Transportation Federal Highway Administration, 2020 (https://www.fhwa.dot.gov/bridge/inspection/tunnel/inventory/download.cfm). In the public domain.

Assuming an achievable market share of x %, expected wins can be expressed, for instance one tunnel project per fiscal year in the U.S., and an expected segment revenue and profit can be calculated based on this historical dataset. Accordingly, following formular applies to calculate the expected achievable market share per segment:

Expected achievable market share in revenue = (Number of estimated automation applications within a segment) (expected market share in %) (expected revenue per application)

Similarly, the expected profit can be stated.

MCDM Techniques and Segment Assessment Matrix. While outside the scope of this study to thoroughly evaluate each potential industry for redundant controllers, a framework for an analysis is developed. Multicriteria Decision Making (MCDM) techniques "can be used to identify a single most preferred option, to rank options, to short-list a limited number of options for subsequent detailed appraisal, or simply to distinguish acceptable from unacceptable possibilities" (Uddin, 2020). Therefore, it provides a basis for decision making combing different assessment criteria. However, expert judgement remains important for this critical decision.

Depending on the decision context, number of persons involved, and the detail level of information available, there are several formal MCDM techniques including Pugh Matrix, Weighting and Majority Judgment, Analytical Hierarchy Process (AHO), Multiattribute Utility Theory (MAUT), and Conjoint Analysis (Uddin, 2020). Alternatively, Appendix M shows a simplified assessment on different criteria with very attractive, moderately attractive, and unattractive can be used (Adams, 2017). An organization might decide to use a simplified model if information available are on a less detailed level. While this is a qualitative assessment based on expert judgement it triggers thought and research processes and gives an overview for further decision making.

For this study the Weighting and Majority Judgment, which is a method commonly used for group decision making, is utilized (Uddin, 2020). The decision context and goal are the evaluation of end-user/OEM target markets for the S7-1500R/H system in the U.S. The goal is to prioritize according to segment attractiveness and further investigate and map most attractive segment.

The final template shown in Appendix N was developed after reviewing with Siemens (JW, AC, AM, Siemens, personal communication, July 2021). The defined segment attractiveness criteria followed by the unit are:

- Segment growth (+, -, =)
- FA Business (Yes/No)
- Segment size (in revenue)
- Estimated Achievable Market share (in%)
- Expected Segment Profit
- Estimated current segment presence (in%)

The Weighting and Majority Judgment method is used to evaluate following segment attractiveness criteria on a scale from 1 = unattractive to 5 = highly attractive

- Competitive Intensity
- Likely Power of Value Proposition
- Ease of Segment Access
- Strategic Synergy

Additionally, the segment attractiveness criteria can be weighted to justify decision-makers priorities in assessing industries.

The segment growth is referring to the end-user industry development since it is defined as a demand driver. External data base as listed in table four can be used to assess the industry development as growing (+), declining (-), or steady (=). Factory Automation (FA) business is to be evaluated with yes or no, which helps to manage subsequent Siemens internal activities. The segment size in revenue can be evaluated by estimating possible applications and projects within one industry and multiply it with the average revenue of Siemens products sold per application.

The estimated achievable market share needs to be defined by expert for the industry and/or product. The expected segment profit can be derived by taking the estimated market share and segment costs into account. The current segment presence requires a continuous data collection about the application and end-user or OEM industry. In this case it can be evaluated per data analysis. If the data are not access able, expert judgment can be used to estimate the current market presence. Besides, external market research service provider have information on market shares in PLC industries.

In a session with product and market experts the results of a 5 forces analysis can guide the meeting and help to evaluate the competitive intensity on a scale from 1 to 5. However, the results should be objectively presents while the voting should be conducted by each decision maker independently. The likely power of value proposition is considered as important. In other words, it is an assessment of how well the Siemens solution technically fulfills the customer requirements in this sector at all and compared to competitors. If this attribute is scored low, this is most likely a reason to neglect the industry as a focus industry. But especially if the industry is interesting at other attributes (above-average industry growth, low competitiveness, etc.), it should circle back to the product management in terms of evaluation of how the likelihood of value proposition can be increased. The ease of segment access refers to existing distribution channels which can be used, barriers of entry, existing internal structures which can be used, etc. Lastly, strategic synergy captures favorable synergies on a scale from one to five. For example, internal segment management, cost, or value synergies.

Concluding, the matrix provides an overview and combines qualitative and quantitative assessment factors for each segment. Hence, it is a valuable tool to decide on focus segments, a prioritizing when limited resources or even guides a decision if a segment is not worth targeting

or the service or goods need to be adapted to improve the value proposition. However, the matrix is not a stand-alone decision tool, rather it builds a basis for data driven managerial decision-making, while combining the expert judgement of several decision-makers an quantitative assessment criteria.

Segment Mapping

The application of the nested approach is useful as a basis for building segments to target. However, a sequential application resulting in a hierarchical tree structure is not applicable. Rather, a multidimensional model is needed. For example, if a product family within the PLC SIMATIC portfolio is selected in one segmentation process step, it cannot be changed at a later segmentation level. But job titles of customers are independent of the type of PLC bought, the organization's location, or industry. Thus, several variables are reasonable to apply to a specific product family, while others can be applied to the whole relevant market for PLCs and concurrently for a specific product family.

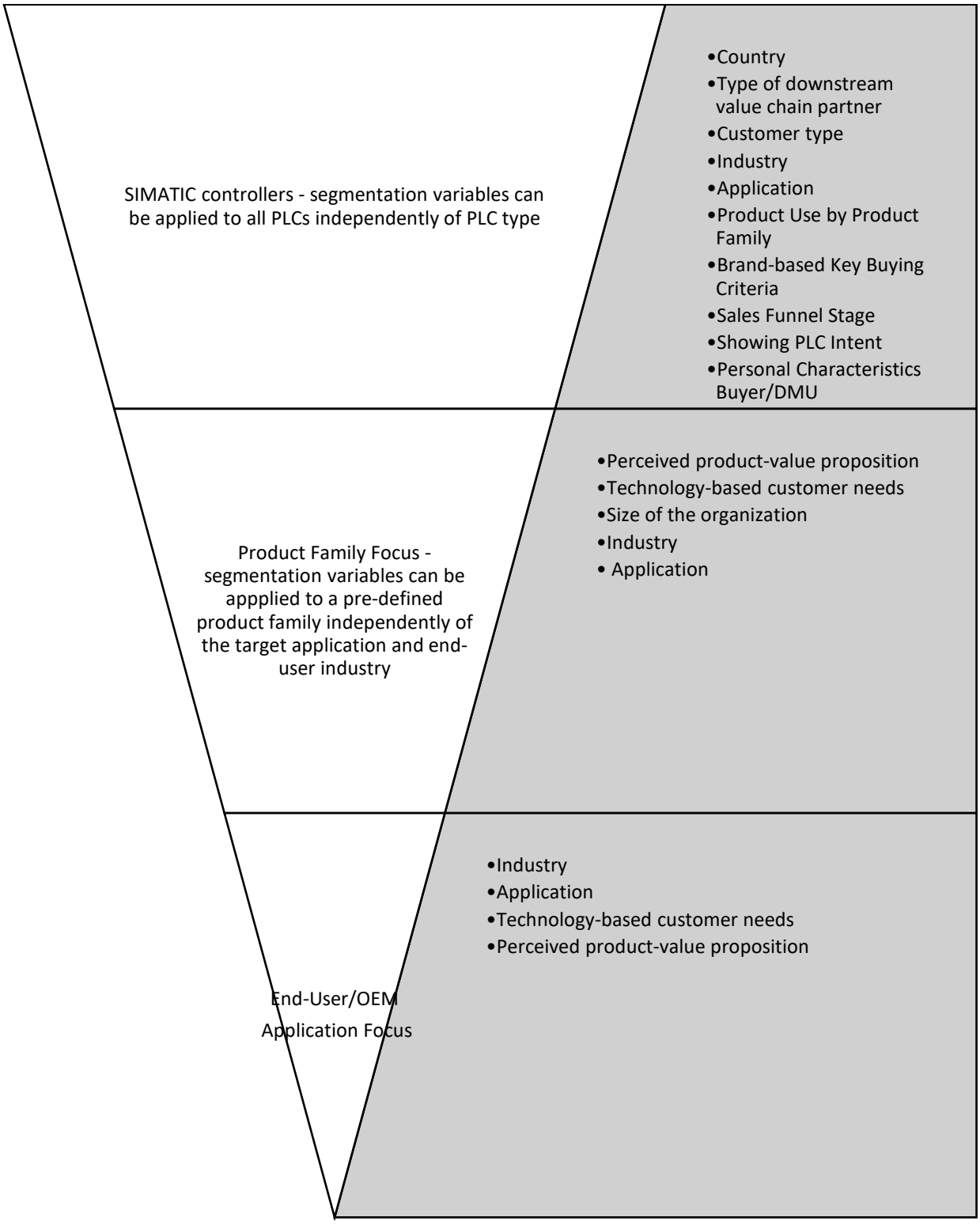
Therefore, a multidimensional framework is recommended to justify the different levels of target marketing as well as to integrate the fact that some variables are applicable PLC type independently, while others are focused on the PLC type but in depended on the end-user and application, or end-user application focused. Besides, variables can be as a checklist at multiple levels of detail, such as industries and applications. As a result, three supersegments arise. Figure 15 illustrates a framework, adopting the shape of an inverted pyramid, to select and map target markets for SIMATIC controllers. It is recommended to follow all three targeting approaches continuously over different distribution channels. Ultimately, the goal is to find the right sales channels and marketing mix for each supersegment. Hereby, sales channels include to identity

the right partner in the value chain such as include system integrators and distributors, as well as identifying the right internal contact persons such as vertical sales partners for specific industries.

A segment mapping follows supported by using the pre-defined segmentation variables to define target market. Besides, the author recognizes each target audiences need different target messaging. However, considering the goal to create product benefit awareness and follow a pull strategy, the target audience can exceed the end-user and OEM and include system integrators and distributors whilst having the same messaging intending to increase the purview. Hence the target audience is distinguished from target messaging.

Figure 15

Framework to Select and Map Siemens SIMATIC Target Markets



Segment One – SIMATIC Controller Prospects

Table 11 summarizes the target audience leveraging the PLC intent list, which is a list of accounts showing PLC intent updated on a weekly basis. Because the names of the accounts are already available, an additional filter on industries is not reasonable. The goal is to create brand and SIMATIC controller application awareness at the time where an account already shows intent. An overview of different industries and applications combined with brand key buying factors and overall technological benefits is a reasonable messaging. A clear call to action point is important to include in the messaging, such as link to a sales contact person or to additional information.

Table 11

Target Market Multidimensional Segment SIMATIC Controller Prospects

	Target Audience	**Target Messaging**
Country	U.S.	U.S.
Type of downstream value chain partner	Distributors, System Integrators, End-Users, OEMs	End-Users, OEMs
Customer type	New customers	New Customers
Industry	N/A	Relevant market – pre-defined industry list Siemens
Applications	N/A	Predefined Application list Siemens
Product use by Product Family	N/A	Overview all SIMATIC controllers
Brand-based Key Buying Criteria	N/A	Technology/Functionality & Service integrated in all PLCs (such as TIA portal, Safety, Reliability, …)

Sales Funnel Stage	Interest – Showing PLC Intent	Interest – Showing PLC Intent
Personal Characteristics Buyer/DMU	Pre-defined List of Job Titles OEM and End-Users	Pre-defined List of Job Titles OEM and End-Users
Personal Characteristics Buyer/DMU (LinkedIn)	Job functions, seniority, and years of experience as defined	Job functions, seniority, and years of experience as defined

Segment Two –Redundant Controller Prospects

Segment two is built based on developed prospects for the redundant controllers. Table 12 summarizes the target audience and messaging.

Table 12

Target Market Multidimensional Segment Redundant Controller Prospects

	Target Audience	**Target Messaging**
Country	U.S.	U.S.
Type of downstream value chain partner	Distributors, System Integrators, End-Users, OEMs	End-Users, OEMs
Customer type	New customers	New Customers
Industry	Industry list S7-1500R/H	Name examples from focus industries, while transport message that beneficial to many industries
Applications	Application Examples see list	Application Examples see list
Product use by Product Family	Redundant controllers	Redundant controllers
Brand-based Key Buying Criteria	N/A	Technology/Functionality & Service integrated in all

		PLCs (such as TIA portal, Safety, Reliability, …), Price
Sales Funnel Stage	• Interest – Showing PLC Intent, additional filter on industries • Awareness – Leverage Industry list	• Interest – Showing PLC Intent, additional filter on industries • Awareness – Leverage Industry list
Personal Characteristics Buyer/DMU	Pre-defined List of Job Titles OEM and End-Users	Pre-defined List of Job Titles OEM and End-Users
Personal Characteristics Buyer/DMU (LinkedIn)	Job functions, seniority, and years of experience as defined	Job functions, seniority, and years of experience as defined
Size of Organization	Organizations with >200 employees	
Perceived product-value proposition	See earlier in this chapter	See earlier in this chapter
Technology-based customer needs	See earlier in this chapter	See earlier in this chapter

Several target accounts are derived. First, the PLC intent list can be filtered according to relevant industries. Distribution channels can be an email or a LinkedIn campaign. The accounts can be contacted via email directly or an additional industry filter in LinkedIn can be used. Specific industry blogs or automation blogs are further channels to promote the redundant controller family.

Second, account list can be created via a market research leveraging NAICS codes. Similar distribution channels apply for promotion. Versatile accounts should be contacted via sales or distributors directly. Touchpoints are simple sales call, digital channels, or trade shows.

Third, organic social media, the DRC, and other internal tools like Yammer or the website are channels to promote the redundant controller and leverage existing networks.

Segment Three– Focus Industry Infrastructure

Similar distribution considerations apply to the third segment, which emphasizes identified focus industries. The messaging should be built on benefits for the application within those industries as well as leverage existing wins as a reference for each segment. Table 13 maps the focus industry infrastructure.

Table 13

Target Market Multidimensional Segment Focus Industry (Exemplary Infrastructure)

	Target Audience	**Target Messaging**
Country	U.S.	U.S.
Type of downstream value chain partner	Distributors, System Integrators, End-Users, OEMs	End-Users, OEMs
Customer type	New customers	New Customers
Industry	Focus Industry, e.g Infrastructure	Focus Industry, e.g Infrastructure
Applications	Applications within focus industry, e.g. Rail, Bridges, Tunnels	Applications within focus industry, e.g. Applications: Rail, Bridges, Tunnels
Product use by Product Family	Redundant controllers within automation portfolio for focus industry	Redundant controllers within automation portfolio for focus industry
Brand-based Key Buying Criteria	N/A	Technology/Functionality & Service integrated in all PLCs (such as TIA portal, Safety, Reliability, …), Price
Sales Funnel Stage	• Interest – Showing PLC Intent, additional filter on industries • Awareness – Leverage Industry and customer list	• Interest – Showing PLC Intent, additional filter on industries

		• Awareness – Leverage Industry and customer list
Personal Characteristics Buyer/DMU	Pre-defined List of Job Titles OEM and End-Users	Pre-defined List of Job Titles OEM and End-Users
Personal Characteristics Buyer/DMU (LinkedIn)	Job functions, seniority, and years of experience as defined	Job functions, seniority, and years of experience as defined
Size of Organization	Organizations with >200 employees	
Perceived product-value proposition	See earlier in this chapter, adapted to specific industry needs	See earlier in this chapter, adapted to specific industry needs
Technology-based customer needs	See earlier in this chapter, adapted to specific industry needs	See earlier in this chapter, adapted to specific industry needs

Using this targeting model and a D&B Hoovers, a list of 626 company names were identified in the industry bridges, tunnels, and elevated highway construction. Further marketing qualification through for example an email or LinkedIn campaign is needed. Additionally, customer identified performing the 5 forces analysis can be further investigated by sales, marketing, and business development to define must wins.

Customer Decision Journey Mapping

Besides, in building a customer map, the customer decision journey (CDJ) mapping is a useful tool. While traditionally communications were developed in a linear fashion, including marketing and sales activities, the information control has shifted from the marketer to the customer. With the advent of digital channels such as the web, social media, or YouTube, the customer decides when to consume information at can access those at any point in the decision journey. Ultimately, the goal is to reach key decision makers at those points where it is most

effective (Hutt & Speh, 2017). An alignment between sales and marketing in building the journey as well as on each stage is indispensable. It requires a deep understanding of each segment including industry context. For example, in an industry with a high concentration rate consisting of few major players, sales should work directly with customers to build a decision journey. Contrary, large segment with many customers need data-driven market research (Lingqvist et al., 2015). Table 14 illustrated a typical B2B customer decision journey and possible action points for sales and marketing at each stage.

Table 14

Action Points Marketer in a B2B Decision Journey

Decision Journey B2B customer	**Action Points to influence customer**	**Action Points to support sales**
Problem Identification	Trigger the need, Build Awareness	Lead list for target segments, Segment typing tool to assist in assigning and qualifying accounts
Research	Surface the product in relevant online searches, interactive demos for channel partners, end users, and industry experts	Tailored and quantified value propositions by customer segment
Consider and evaluate	A tool for end users to compare features and pricing	Next product to buy analysis to foster cross-selling or increase quantities
Formal Request for Proposals (RFP)	Streamlined processes for standard RFPs and proposal approvals	Modular best practice proposal and pitches, bid analysis (bid-history, win loss,...)
Buy	White-glove process for proposal to contract conclusion	Segment specific bids for closing deals

Use and Service	Customer training, appreciation programs, CRM to ensure satisfaction and ongoing usage	Coordination across sales to ensure that new leads are captured and acted upon
Loyalty Repurchase	Before contract renewal, auto-reminder e.g. email	Flag in CRM system before contract renewal

Note. The decision journey of a B2B customer and derived action points. Adapted from *Business Marketing Management: B2B* (p. 262), by M. D. Hutt and T. W. Speh, 2017, Cengage Learning. Copyright 2017, 2013 by Cengage Learning and from *Do you really understand how your business customers buy?*, by O. Lingqvist, C. L. Plotkin, J. Stanley, 2015, McKinsey Quarterly (https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/do-you-really-understand-how-your-business-customers-buy). Copyright 1996-2021 by McKinsey & Company.

Segmentation Implementation Strategy and B2B Product Positioning

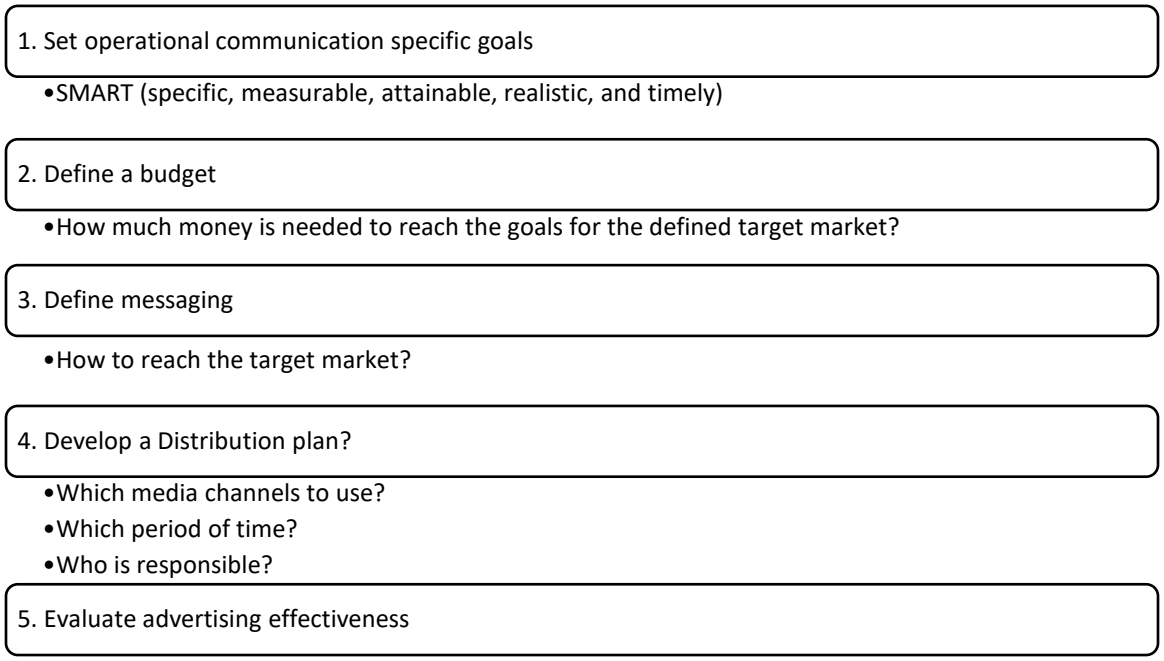
Recapturing chapter two, a segmentation model implementation requires leadership commitment and resources as well as might require a re-organization of sales and marketing. Additionally, it includes the positioning of the product based on defined target markets and messaging, including a definition of a marketing goal and mix (Mora Cortez et al., 2021). Hence, an implementation of a segmentation strategy needs to be planned, coordinated, and monitored answering questions such as:

- How to organize the sales force?
- What requirements (technical and customer service) will organizations have in segments?
- How can the organization provide these services (continuously)?
- Which media outlets can be used to target advertising (Hutt & Speh, 2017)?

This study focuses on a product positioning in terms of marketing communications for which previous considerations including the segment mapping build the basis. While personal selling plays an important role in B2B markets, advertising supports and supplements sales efforts. (Hutt & Speh, 2017). Therefore, the goal is to implement an integrated communication strategy, which focuses on the promotional aspect of marketing only. It intends to coordinate the different tools like advertising, sales promotion, direct marketing, and public relations (Terms Compared Staff, 2020b). The goal is to align the messaging in reaching the target markets over various available communication channels figure 16 illustrates different steps in marketing advertising.

Figure 16

Steps in Advertising



Note. Adapted from *Business Marketing Management: B2B* (p. 266), by M. D. Hutt and T. W. Speh, 2017, Cengage Learning. Copyright 2017, 2013 by Cengage Learning and from *Industriegütermarketing Grundlagen des Business-to-Business-Marketings (Industrial Marketing Fundamentals of business-to-business marketing)* (p. 319), by K. Backhaus and M. Voeth, 2014, Franz Vahlen. Copyright 2014 by Franz Vahlen Muenchen.

Communication Objectives and Target Markets

The communication objective is to create brand and product and application awareness in the U.S. market utilizing a pull-strategy focused on end-users and OEMs. A subsequent goal is to generate new leads and ultimately find sales qualified accounts. Three targeting levels were identified, including promoting all SIMATIC controllers, redundant controllers, and redundant controllers in focus industries.

Communication Message

Ultimately each segments needs a unique communication message derived from the customer segment mapping.

Communication Channels

Based on a decision journey touch points can be identified. Lingqvist et al.'s (2015) research found a B2B customer regularly uses six different interaction channels throughout the decision journey and nearly 65% reported inconsistent experiences. Hence, it is crucial to identify touch points, be consistent and align sales and marketing activities throughout the customer decision journey. Since the goal of this study is the top of the sales funnel, touchpoints at the first three levels of the decision journey are identified (Table 15). While the B2B decision making journey serves as a guideline, it can be adapted based on the segments to target to identify relevant touchpoints.

A cross-channel marketing strategy is recommended leveraging Table 15 for each level of the target marketing framework. On that basis an operational roll-out planning can be created identifying responsibilities, frequency, and scheduling at each state of the customer decision journey.

Table 15

End-User and OEM Touchpoints at the Top of the Sales Funnel

Decision Journey B2B customer	Action Points to influence customer	Action Points to support sales	Touchpoint examples
Problem Identification	Trigger the need, Build Awareness	Lead list for target segments, Segment typing tool to assist in assigning and qualifying accounts	Social networks, websites, blogs, ads in journals, discussion forums, display ads, business publications, podcasts, PR, fairs and tradeshows
Research	Surface the product in relevant online searches, interactive demos for channel partners, end users, and industry experts	Tailored and quantified value propositions by customer segment	SEO (search engine optimization) Webinars Wiki Video, YouTube Email Ad Personal Selling Application videos Fairs and Tradeshows Website Consult Channel Partner Siemens Industry Online support
Consider and evaluate	A tool for end users to compare features and pricing	Next product to buy analysis to foster cross-selling or increase quantities	Controller Configurator Website Personal Selling Consult Partner Video Siemens Industry Online support

Note. Extended based on table 14. Copyright attributions see table 14.

Chapter 5. Results and Discussions on B2B Target Marketing Process SIMATIC Controllers

Chapter five presents and discusses the developed target marketing framework as well as tools, checklists, and templates, which support several steps in the process. The chapter closes with recognizing the limitations of this study and a recommended course of action.

Presenting the Process and Defined Methods

The action-based research indicated that it needs two related processes to define target markets for Siemens SIMATIC controllers. First, a market segmentation relevant to all controllers, which serves as a guideline for further target marketing activities. In this study, the segmentation variables intent two purposes. They serve as a guideline for continuous data collection and evaluation. Besides, they can be used as a checklist for defining target markets based on different targeting levels and goals. Second, a needs-based segmentation selecting a set of customer needs or jobs-to-be-done, resulting in target markets for one specific product family.

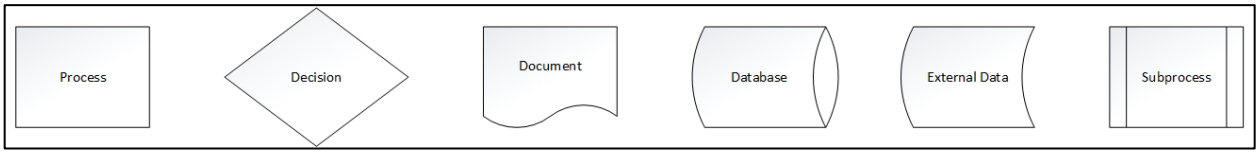
After evaluating and reflecting on the approaches, this process includes the network approach, the nested approach, and the needs-based segmentation in an overall framework. As such, they serve as tools to build a multidimensional segmentation model in different ways. The network approach facilitates an overall understanding of the market demand and key demand drivers, as well as a focus for the targeting initiative are derived. The nested approach serves as a guideline to identify and classify segmentation variables. Generally, all segmentation models can serve as a checklist to find relevant segmentation variables. Finally, the needs-based segmentation centers the customer needs rather than the product only. In this study, segmenting

according to the customer needs is equivalent to cluster the market into industries and applications.

The process is developed with Microsoft Visio, visualized as a flow chart, and presented in figure 18. Figure 17 shows the basic flow chart shapes used. The following paragraphs describe the processes. Adapted from the Project Management Institute, Inc. (PMI) (2017), the inputs, tools and techniques, and outputs are outlined for processes where applicable.

Figure 17

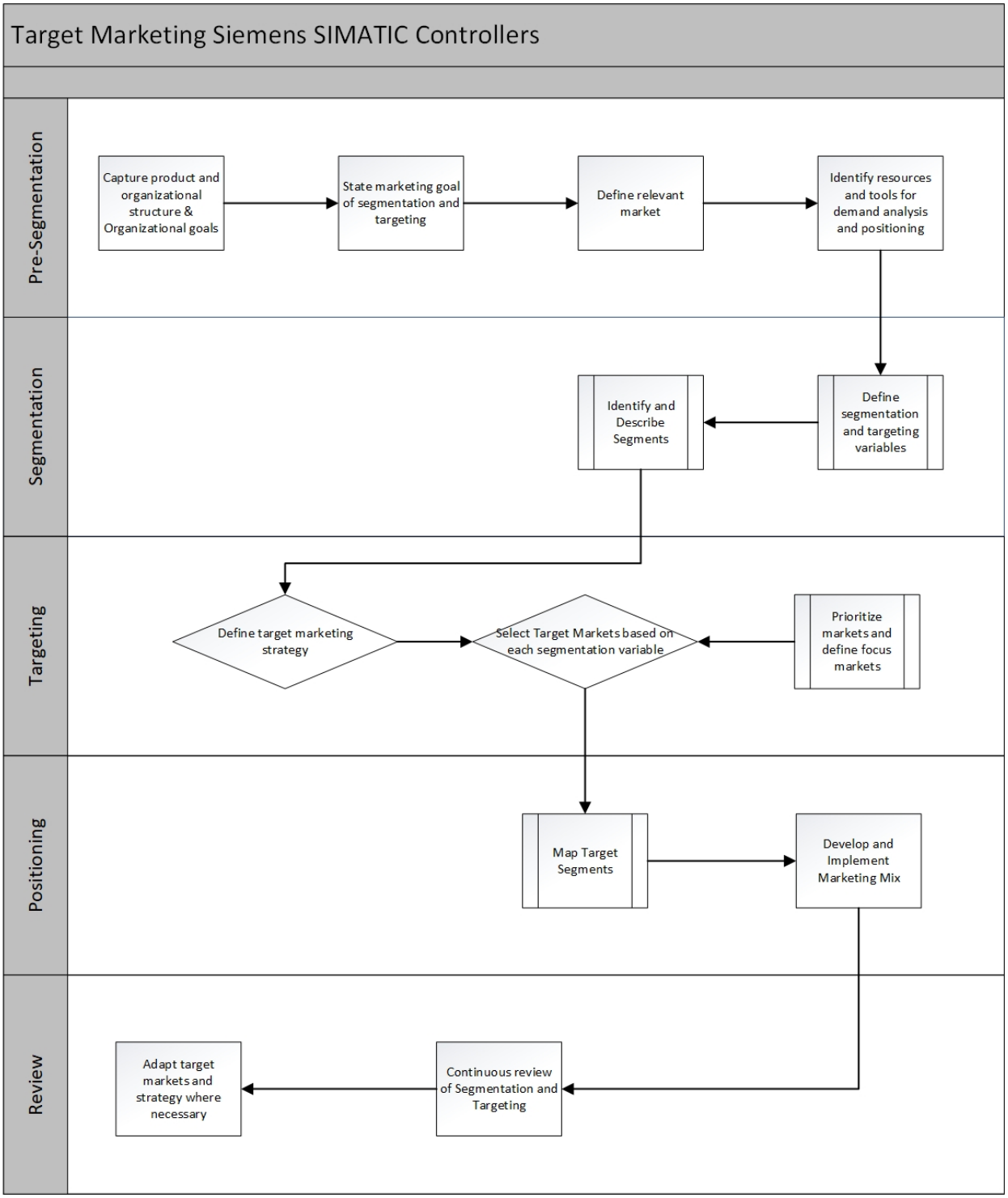
Legend Basic Flow Chart Shapes Legend



Note: Basic flow chart shapes of Microsoft Visio are used to present the framework. A subprocess links to another page, where the steps are outlined in more detail.

Figure 18

Process Target Marketing Siemens SIMATIC Controllers



Capture Product and Organizational Structure & Organizational Goals

Considerations about the product and organizational structure are necessary to perform subsequent steps in the process. Additionally, segmentation and targeting goals and the segmentation itself should be derived from organizational and business unit goals.

State Marketing Goal of Segmentation and Targeting

The research indicated that segmentation is purposive and context-dependent, and the approach should reflect the problem to be solved. Hence, a statement of the segmentation and targeting goal is the first crucial step of the targeting process. It serves as guidance throughout the process. The goal should be derived from organizational or business unit goals. Following considerations can be made:

- Is the segmentation and targeting research performed within an existing structure or to build a new segmentation?
- What is the focus of the initiative considering pushing sales of a specific solution or product family, push sales in a specific industry, or regional area focusing on a broader automation portfolio, push specific topics such as cybersecurity or safety, increase overall brand awareness, etc.?
- Does the targeting initiative intent to find new growth opportunities, niche markets, single accounts to follow up as must-wins, etc.?
- Attract new leads or focus on extent sales with existing customers?
- Intent to build more targeted and personalized advertising
- Find the right target audience
- Support pre-product-development efforts, including targeting components of the marketing mix, as contrary to an initiative for already developed products.

Define Relevant Market

The definition of the relevant market follows the pre-defined goals. Depending on the segmentation approach to use the relevant market is a start point for further segmentation or is built based on a needs-based segmentation. Eventually, it is a broadly expressed statement on a target market for a product line, a product family, a business unit, or an organization. Table 16 describes the process' input, tools and techniques, and output.

Table 16

Definition of the Relevant Market - Input, Tools & Techniques, Output

Input	Tools & Techniques	Output
-Mission and Vision of the organization -Organizational and BU goals -Product Portfolio -Segmentation and targeting goal	-Expert Judgement - Data Analysis - Needs-based segmentation	-Statement on what is the relevant market

Identify Resources for Demand Analysis and Positioning

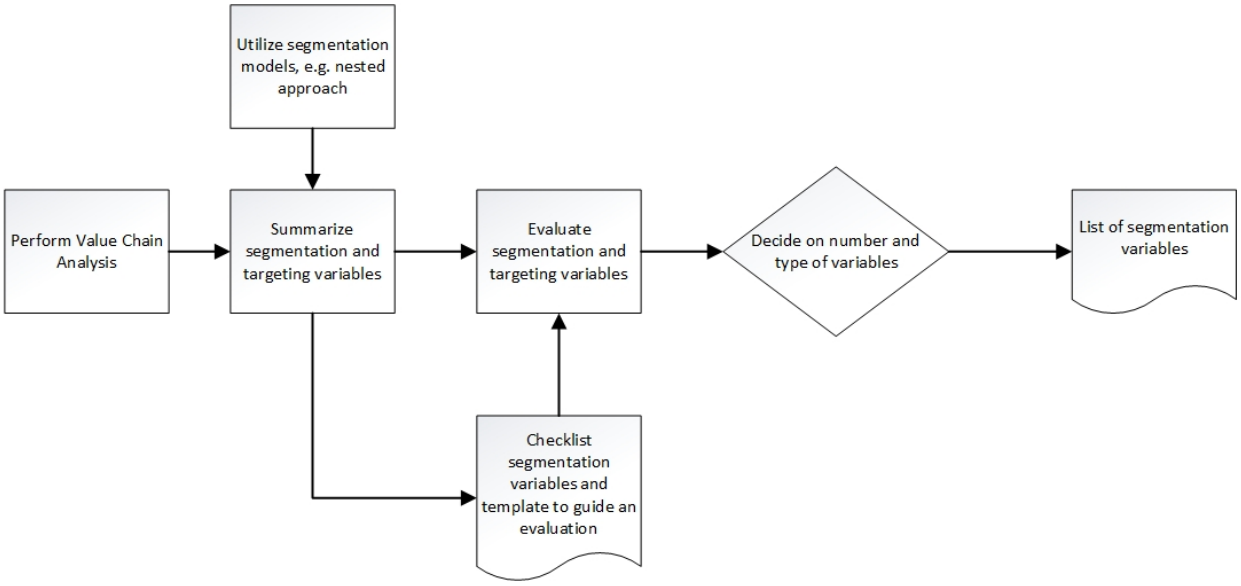
To define and evaluate segmentation and targeting variables, knowledge about the adjacent process of target marketing is important. Resources can include external and internal assets and tools.

Define Segmentation and Targeting Variables

The next step is a definition of reasonable segmentation variables. A subprocess is shown in figure 19. The network analysis to understand the demand market and attain key drivers is the first step.

Figure 19

Subprocess to Define Segmentation and Targeting Variables



While overall, a multidimensional approach is reasonable, other approaches serve as a guideline and support developing a list of potential segmentation variables. Appendix O provides a checklist of segmentation variables and a template to guide the evaluation. Figure 11 shows an example of an evaluation conducted in the course of this study. Expert judgment is an important factor in evaluating the segmentation variables. Additionally, the criteria of measurability, accessibility, substantiality, and responsiveness support the evaluation. To evaluate the variables, knowledge of resources supporting upstream and downstream processes is necessary. The output of this subprocess is a list of reasonable segmentation variables. Table 17 shows a summary of inputs, tools and techniques, and outputs of this process step.

Table 17

Define Segmentation and Targeting Variables - Input, Tools & Techniques, Output

Input	Tools & Techniques	Output
-Definition of the relevant market -Segmentation and targeting goals	-Expert Judgement -Data Analysis (Resource Identification) - Segmentation Model to derive variables - Checklist Segmentation variables and template to guide an evaluation	- List of Segmentation variables

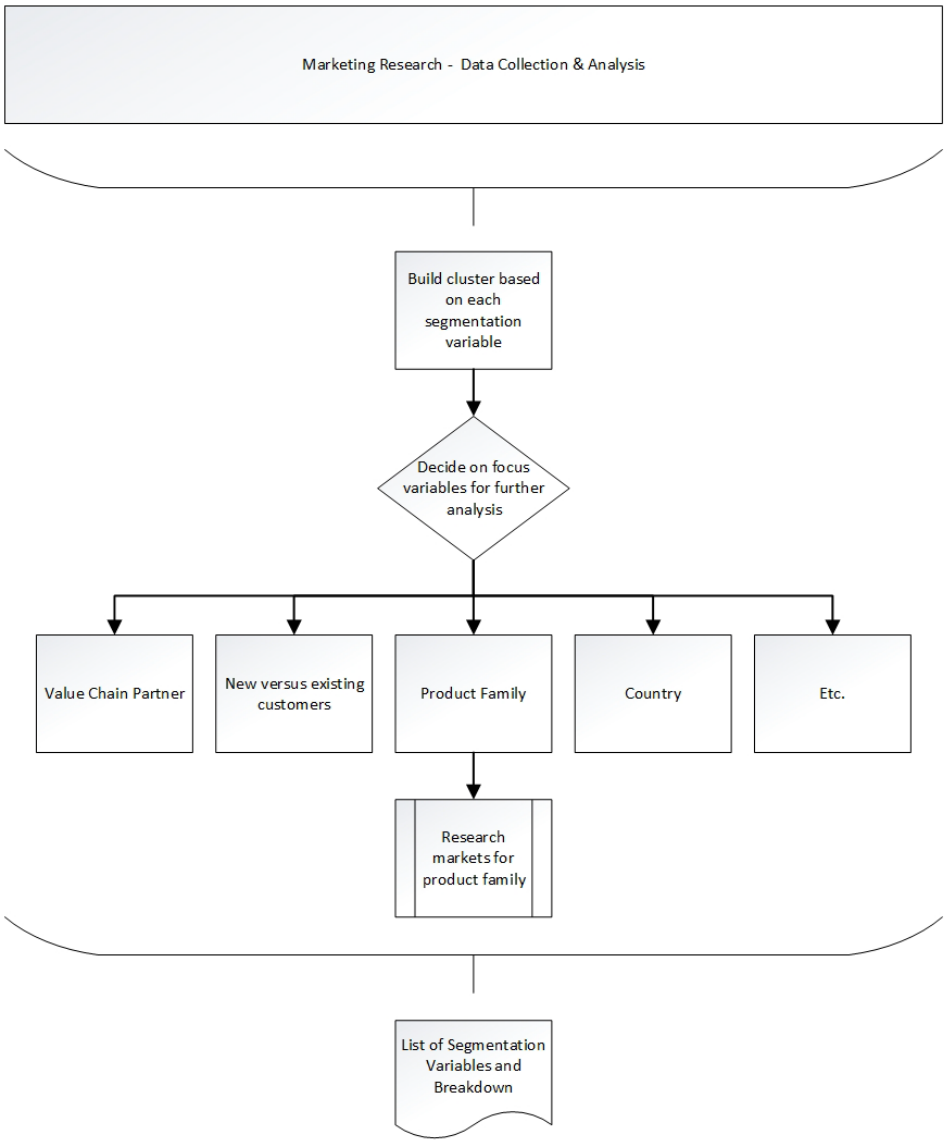
For future target marketing activities of Siemens SIMATIC controllers, the variables selected can be used to map segments as presented in chapter four, table seven. Indeed, this subprocess can be neglected.

Identify and Describe Segments

Figure 20 illustrated the process to identify and describe segments. Inputs, tools, and techniques for identifying and describing segments are summarized in table 18.

Figure 20

Subprocess to Identify and Describe Segments



Depending on the selection of segmentation variables, marketing research, to a certain extent, is necessary to identify and describe segments. For example, segmentation variables, most likely macro variables, such as NAICS industry, size, or location of an organization, are obtainable through secondary data collection. Contrary, other variables, most likely micro

variables, for instance, key buying criteria or a customer value proposition, need primary data collection through expert, partner, or customer interviews or surveys. The goal is to describe what makes the emerging clusters unique and actionable, which starts with a breakdown, as shown in table seven. Mindmanager is a valuable tool to summarize all segmentation variables and resulting clusters. On that basis, a marketer can either decide to focus on all resulting segments or more likely to focus on certain segments for further research and investigation reflecting the pre-defined segmentation goals and key demand drivers, for example, a focus on applications and end-user /OEM industries for a specific product family, personal characteristics of the buyer, sales channel partner buying differences, etc. The next steps are outlined focused on product family, applications, and industries.

Table 18

Identify and Describe Segments - Input, Tools & Techniques, Output

Input	Tools & Techniques	Output
- List of Segmentation Variables	- Data Collection and Analysis. Secondary Data and primary data from sales or a research study - Expert Judgement - Mindmanager	- Breakdown based on each segmentation variable

Research Markets for a Product Family

Figure 21 shows several action points for conducting market research for a specific product family. Depending on the situation, some steps can be neglected, for example analyzing existing wins or reviewing existing material if the segmentation initiative is conducted before product launch. Table 19 summarizes subprocess inputs, tools and techniques, as well as outputs.

Leveraging the jobs-to-be-done theory and writing down what the product family intends to achieve at the customer application supports the brainstorming process. The list of industries is not a static document, but it rather needs continuous review to reflect the fast-changing market conditions. Also, with progressing market maturity of a product family, new data can be collected, providing valuable insights in gaining a better customer understanding into broadly defined markets. This process supports investigating and evaluating new and adjacent markets.

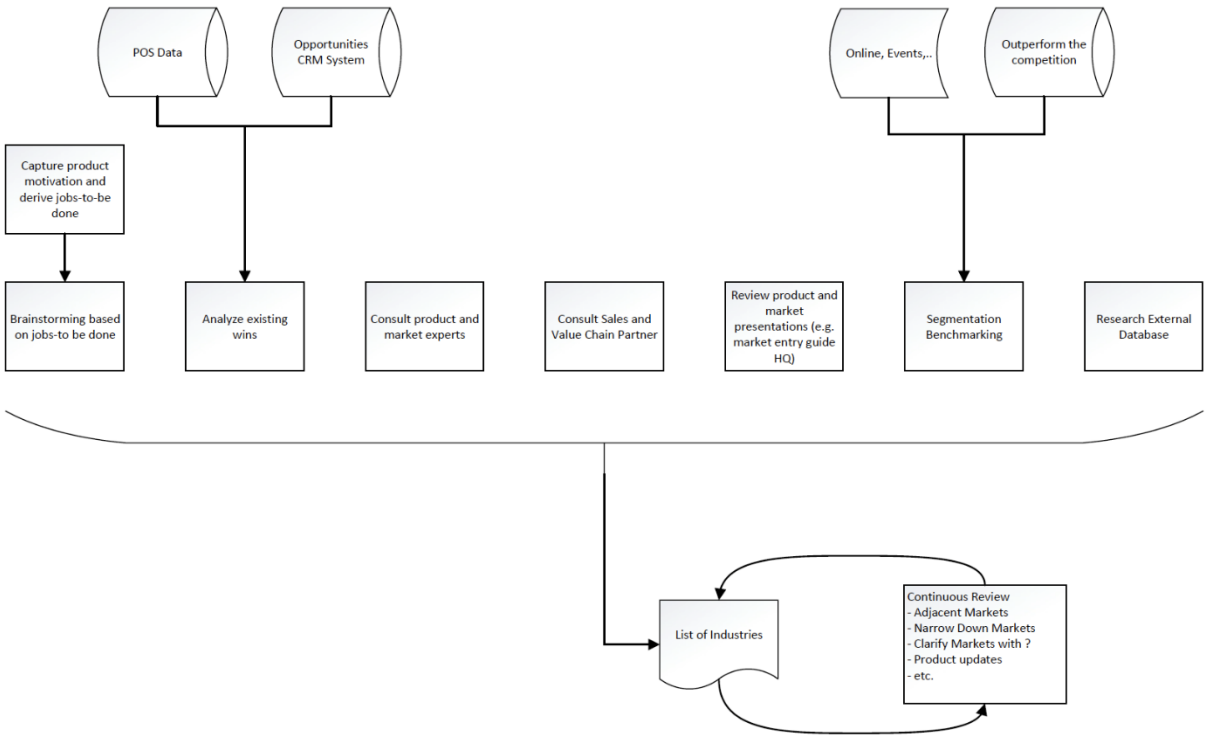
Table 19

Research Markets for Product Family - Input, Tools & Techniques, Output

Input	Tools & Techniques	Output
- Statement on what is the relevant market - Past Sales Data	- Data Collection and Analysis. Secondary Data internal (CRM system, presentation, etc.) and external data (market research platforms, blogs, etc.) primary data from sales or a research study -NAICS code - Expert Judgement -Expert Interviews - Brainstorming - Leverage jobs-to-be-done theory - Segmentation Benchmarking	- List of industries

Figure 21

Subprocess Research Markets for Product Family



Phase Targeting

Targeting includes a decision of a target marketing strategy and selecting target markets based on each segmentation variable. With a focus on industries, marketers need to evaluate and define the most valuable industries. As a result, several target cluster/s of each segmentation variable should be derived to focus on. Table 20 summarizes input, tools and techniques, and outputs.

After several segments have been identified, a marketer needs to decide about the targeting approach. As introduced in chapter two, the decision range extends from mass marketing over a differentiated, single-segment to a Segment-of-One target marketing strategy.

In other words, a decision must be made if all segments should be treated as the same, differentiated, focused on one segment, or each account individually, which is the most personalized way. Hereby, resources such as personal (especially sales and marketing), budget, as well as data availability play an important role. Figure 22 illustrates the subprocess to prioritize markets and define focus markets.

Appendix P provides a template to analyze the competitive environment utilizing Porter's five forces. Additionally, Appendix N shows the template developed and described in chapter four to assess segment attractiveness.

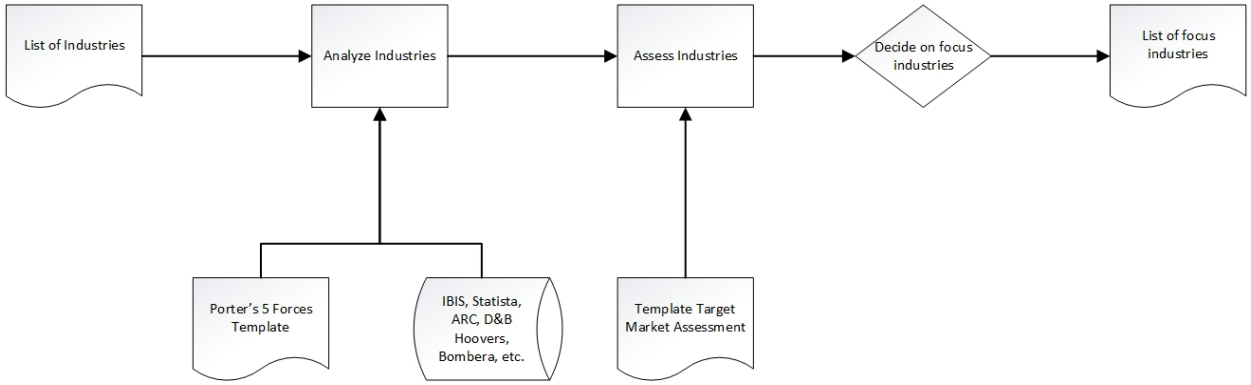
Table 20

Targeting - Input, Tools & Techniques, Output

Input	**Tools & Techniques**	**Output**
- List of Industries -Breakdown segmentation variables -Resources (Budget, personal, etc.)	- Mindmanager - Marketing Research Expert Interviews (Sales, Business Development, Marketing) Customer /Channel Partner Interviews/Surveys External databases - Expert Judgment - MCDM Assessment Matrix - Analysis Competitive environment, Porter's five forces	- Extended Segment Description - List of Focus Industries - Results Competitive Industry Analysis - Target Marketing Strategy, including Level - Target Messaging - Target Audience

Figure 22

Subprocess Prioritize Markets and Define Focus Markets

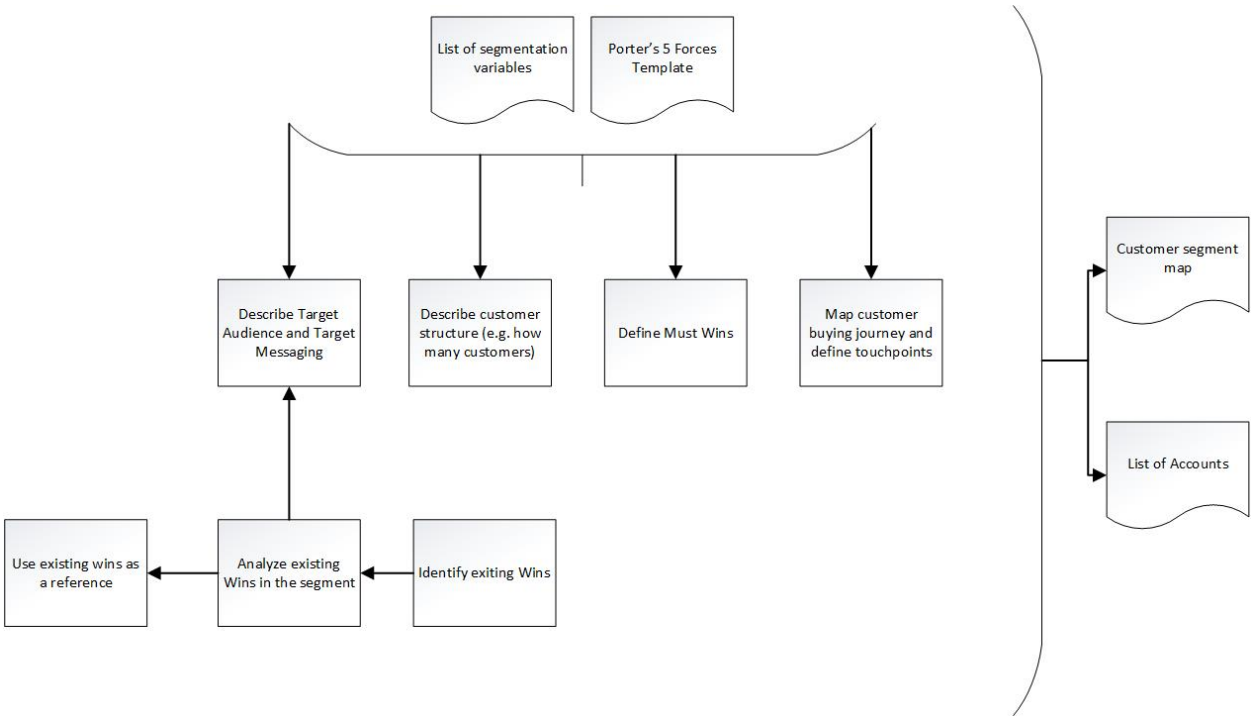


Phase Positioning

Mapping the target segments provides an overview of each segment's needs and builds the bridge to positioning the products and solutions in defining the target audience and messaging. Figure 23 illustrates different steps to develop the customer segment map. An additional output is a list of accounts to either perform further marketing qualification or to hand over to sales to follow up.

Figure 23

Subprocess Map Target Segments



On that basis, the marketing mix can be developed. A "smart" goal definition (specific, measurable, attainable, realistic, and timely (CFI Education Inc., n.d.) is crucial to guide the positioning but also to provide a basis for reviewing evaluating the campaigns. This study focuses on an integrated communication strategy. Figure 16 illustrates different steps in marketing advertising. Also, research indicates the segmentation implementation needs management commitment and can include a re-organization of the structure.

Continuous Review of Segmentation and Targeting

While this study conducted a static segmentation, the aspect of a continuous segmentation should in no way be neglected because it is essential to justify an ever-changing market. Hence, feedback should be collected on several pillars, including order intake, sales performance, customer feedback, partner management, and actual advertisement evaluation.

Order Intake. Evaluation should include which target prospects and leads turned into order intake. Also, order intake and profit of defined segments are key performance indicators (KPIs). Hereby, it is distinguished between an overview of opportunities order intake and point of sales data. This study indicated the need for comprehensive data collection, especially on defined segmentation variables. For example, the information about the end-user and OEM industry as well as the product family and actual application should be collected and stored in the CRM system. As a result, a dashboard can be created and facilitates a continuous review and a dedication of new patterns, industries, and applications on the opportunity level but also on the actual sales and lost sales (won and lost opportunities).

Sales Performance. Since amongst others, target marketing has the goal to support sales, for instance, in ways that a prospect already knows the organization and ideally a customer value proposition of a solution or product before the actual sales call or contact as well as to support through qualified leads and a definition of must-wins, sales performance is another KPI to review segmentation and targeting. Sales feedback can be collected through expert interviews, regular meetings, or surveys. For example, the quality of the leads can be evaluated.

Customer Feedback and Partner Management. Evaluating customer feedback and partner management are further important pillars facilitating continuous segmentation. A steady dialogue with end-users, OEMs, system integrators, and distributors is not only crucial for sales success but also to indicate market trends and capture adjacent markets and customer needs. A yammer community for specific segments can ease the exchange of information between sales, business development, and marketing. Periodical surveys such as customer satisfaction surveys or customer interviews with end-users or sales channel partners can further support this process.

Advertisement Evaluation. While previous pillars facilitate a review of target market strategy, it is difficult to use them to directly evaluate advertisement because a marketer rarely expects advertisement to ultimately turning in a revenue. However, advertisement is expected to create a product, solution, or brand awareness and knowledge. Additionally, advertisement is expected to impact the purchase decision along the buyer's or segment's decision journey and to create indirect communication effects referred to as word-of-mouth communications. Thus, it is important to measure and review (Hutt & Speh, 2017). Table 21 summarizes different areas to evaluate. Digital Advertising facilitates this process while well pre-defined objectives and KPIs are essentials.

Table 21

Main Areas for Advertising Evaluation

Area	Focus of measurement
Target market coverage	Degree to which advertisement succeeded in reaching defined target markets
Key Buying Motives	Factors that triggered the purchase decision
Effectiveness of Messages	Degree to which the message registered with key buying influentials in defined market segments
Media Effectiveness	Degree to which various media successful reaching defined target markets with message
Overall Results	Degree to which advertising accomplished its defined objectives

Note. From *Business Marketing Management: B2B* (p. 273), by M. D. Hutt and T. W. Speh, 2017, Cengage Learning. Copyright 2017, 2013 by Cengage Learning (Hutt & Speh, 2017).

Concluding, the continuous review of segmentation and targeting circles back to each process within the target marketing process, such as adapting the target audience and messaging, target industry, segment mapping, and the overall target marketing strategy and objectives.

Leverage the Process

Marketers can use this process as a guideline for considerations in formulating target marketing strategies. While it can be seen as a step-by-step approach, it is not a linear process because processes are interrelated. For example, the needs-based segmentation might impact the definition of the relevant market. Therefore, the degrees of freedom are high and expert judgment is needed in applying this process.

Besides, steps might be neglected. The process of defining segmentation and targeting variables does not necessarily have to be performed when formulating a target marketing strategy for Siemens SIMATIC controllers. Rather the pre-defined segmentation variables guide continuous data collection and building the target marketing strategy.

Limitations of the Study

The findings of this study must be seen in the light of some primary limitations. The first is the limited access to data. The qualitative analysis of the clusters resulting from defined segmentation variables was focused on the applications and industries of the redundant controller. While exiting wins were analyzed and results included, not every transaction included information about the application and industry. Rather the developed list of industries was built on expert knowledge. As a result, more data would have allowed a more detailed analysis of industries where the product was successfully sold.

Second, this study was timely bounded. A full assessment of all segments, including an in-depth analysis of all industries, would have been necessary for a data-driven decision basis to select the most valuable industries for Siemens. Detailed research of potential industries would have allowed using the developed assessment matrix. However, several expert opinions were considered in defining focus industries. Besides, while this research focused on some

segmentation variables, others need a more detailed analysis. Similarly, a review of selected variables in terms of the degree of heterogeneous buying behavior considering specifically collected data within those clusters might lead to a re-definition of selected variables. While a qualitative assessment of the segmentation variables was performed, it does not provide evidence of full heterogeneity between the segments. Rather it is assumed that there is no complete heterogeneity. Thus, a pre-post comparison and evaluation of the model on the integrity of assumptions are necessary.

Third, the segmentation and target marketing process was developed, focusing on a product family. Differences and tailoring the process when setting other goals, for instance, pushing a specific topic, must be recognized. Because of the nature of qualitative research as well as the segmentation research initiative being context-depended, a generalization of the research findings is not possible.

A Recommended Course of Action

The above limitations result in a recommended course of action. The presented segmentation variables should serve as a guideline for data collection and evaluation. Data collection might, for instance, include conducting a survey with customers and distributors and integrate feedback and evaluation in communication with customers in webinars, tradeshows, or sales channels. Leveraging the CRM system for continuous data collection is recommended. On that basis, a pre-post comparison and evaluation of the model on the integrity of assumptions are recommended.

Next, an analysis of other industries, similar to the analysis conducted for the infrastructure sector, is recommended to leverage the presented assessment matrix. As a result, further segments can be mapped, and operational marketing planning derived.

Besides, an operational roll-out planning, including the definition of responsibilities, schedule, budget, and development of marketing assets to initiate more targeted campaigns based on defined segments, is recommended. The evaluation of feedback is another crucial step to re-define the segmentation model, marketing goals, and content where necessary. Moreover, the integration in an overall marketing plan for Digital Industries to leverage the overall automation portfolio and cross-selling as well as system solutions selling should be considered.

Lastly, considering the aspect of being a continuous ongoing segmentation process rather than one single research initiative, a definition of responsibilities and scheduling considering reviewing the segmentation and targeting is recommended. For example, how often should the segmentation model be reviewed, or who is responsible for updating target industries with product updates. Questions like who is involved in the decision-making and process of defining target markets, who is responsible, where are interfaces, and how can sales and marketing be aligned to allow a consistent customer-focused messaging along the customer decision journey should be addressed.

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APPENDICES

Appendix A: Weinstein's Research Results of Business Technology Companies' Target Marketing Success Utilizing Different Segmentation Strategies

Figure A1

Weinstein's (2014) results on target marketing success related to strategies

Table 2: Market selection strategy and target marketing success

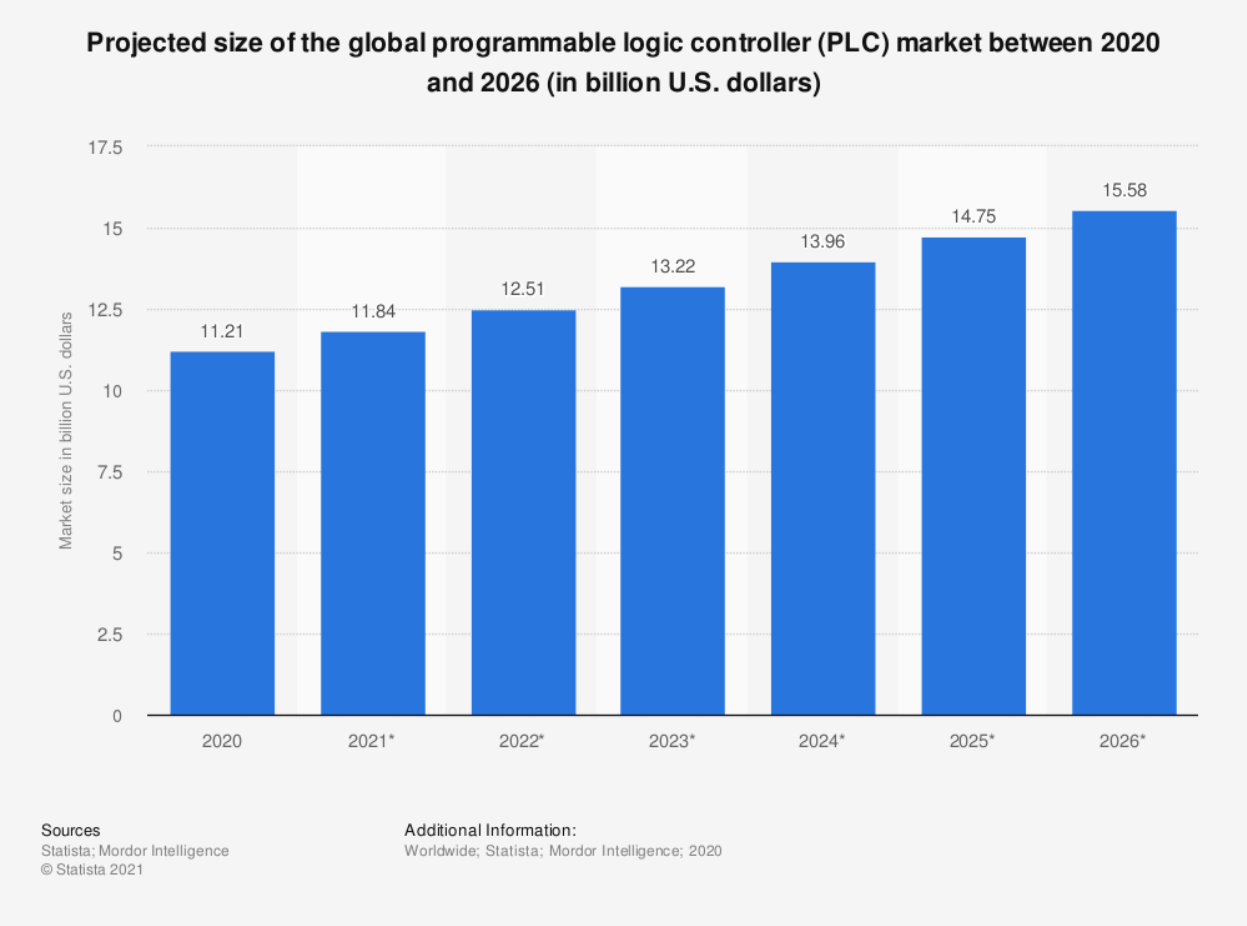
Targeting success market strategy	*Unsuccessful*	*Somewhat successful*	*Successful*	*Very successful*	*N/%*
Undifferentiated	0	4	1	0	5/7%
Differentiated	7	17	21	7	52/75%
Single segment	0	3	2	2	7/10%
Segment-of-1	0	1	2	2	5/7%
Totals/Distribution	7/10%	25/36%	26/38%	11/16%	69/100%

Note. From "Target market selection in B2B technology markets," by A. Weinstein, 2014, *Journal of Marketing Analytics*, 2(1), p. 63 (http://dx.doi.org/10.1057/jma.2014.6). Copyright 2014 by Macmillan Publishers Ltd.

Appendix B: Global PLC Market Size between 2020 and 2026 (in billion U.S. dollars)

Appendix B

Global projected PLC market size



Note. From *Projected size of the global programmable logic controller (PLC) market between 2020 and 2026 (in billion U.S. dollars) (Graph),* by Statista and Mordor Intelligence, 2021 (https://www-statista-com.iris.etsu.edu/statistics/486345/projected-global-pragrammable-logic-controller-market-size/).Copyright 2021 by Statista.

Appendix C

Industry List LinkedIn (October 2019)

LINKEDIN INDUSTRY	NUMBER OF PEOPLE
Information Technology and Services	19196677
Hospital & Health Care	14503513
Construction	14257823
Education Management	11429173
Retail	11249719
Financial Services	10379252
Accounting	9463207
Computer Software	8845451
Automotive	8520162
Higher Education	8227289
Marketing & Advertising	8200733
Government Administration	8191039
Banking	8050709
Health, Welness & Fitness	7264545
Real Estate	7190024
Telecommunications	6642734
Oil & Energy	6486440
Food & Beverages	6476410
Hospitality	5689703
Mechanical or Industrial Engineering	5609882
Electrical & Electronic Manufacturing	5288276
Primary/Secondary Education	5281252
Insurance	5273627
Internet	5009576
Human Resources	4689437
Medical Practice	4647230
Transportation/Trucking/Railroad	4330232
Consumer Services	4306866
Management Consulting	4071874
Pharmaceuticals	3982488
Civil Engineering	3945173

Design	3931675
Research	3881172
Restaurants	3624691
Logistics & Supply Chain	3546524
Architecture & Planning	3532260
Law Practice	3529127
Apparel & Fashion	3252150
Consumer Goods	3203873
Facilities Services	3165573
Food Production	3119302
Non-profit Organization Management	3068321
Entertainment	2932462
Machinery	2916741
Chemicals	2832195
Arts & Crafts	2739434
Wholesale	2666294
Utilities	2535723
Legal Services	2494586
Farming	2431031
Mining & Metals	2421183
Airlines/Aviation	2405731
Leisure, Travel & Turism	2349983
Sporting Goods	2342739
Building Materials	2317973
Music	2149857
Enviromental Services	2137698
Professional Training & Coaching	2030905
Medical Device	2030520
Individual & Family Services	1860604
Cosmetics	1809116
Mental Health Care	1727206
Aviation and Aerospace	1672897
Staffing & Recruiting	1672466
Industrial Automation	1653869
Graphic Design	1639527
Security & Investigations	1614345

Import and Export	1595332
Public Relations and Communications	1565888
Textiles	1563422
Military	1551130
Broadcast Media	1542716
Biotechnology	1536566
Media Production	1520411
Business Supplies & Equipment	1513730
Computer Networking	1489730
Writing & Editing	1475735
Consumer Elecronics	1465350
International Trade and Development	1397993
Events Services	1389237
Photography	1366983
Renewables & Envirnoment	1318363
Computer Hardware	1315815
Civic and Social Organization	1275655
Furniture	1197044
Defense & Space	1184912
Computer & Network Security	1143077
Printing	1130902
Fine Art	1103610
Religious Institutions	1062678
Investmend Management	1050092
Law Enforcement	1033675
Publishing	1028001
Information Services	975115
Maritime	954962
Outsourcing/Offshoring	938856
Warehousing	937743
E-learning	888433
Executive Office	874947
Government Relations	847985
Animation	828609
Semiconducs	801795
Supermarkets	774477

Program Development	720828
Public Safety	719803
Plastics	717090
Alternative Medicine	701539
Performing Arts	679161
Online Media	676664
Motion Pictures & Film	675210
Commercial Real Estate	673941
Judiciary	668991
Packaging and Containers	658331
Luxury Goods & Jewelry	622203
Veterinary	620386
Computer Games	608479
Investment Banking	603021
Market Research	602979
International Affairs	601210
Wine & Spirits	559993
Newspapers	558398
Translation & Localisation	556080
Recreational Facilities & Services	546573
Sporting Goods	540562
Paper & Forest Products	532646
Capital Markets	522357
Public Policy	519698
Package/Freight Delivery	519161
Libraries	456492
Wireless	451410
Gambling & Casinos	435111
Venture Capital & Private Equity	408043
Glass, Ceramics & Concrete	398075
Philanthropy	387678
Ranching	386123
Dairy	364430
Museums and Institutions	358110
Shipbuilding	353022
Think Thanks	335248

Political Organization	329724
Fishery	282056
Fund-Raising	258899
Tobacco	243124
Railroad Manufacture	236080
Alternative Dispute Resolution	223680
Nanotechnology	166608
Legislative Office	139994

Note. From *LinkedIn Industries List, Rankings and Statistics [October 2019],* by U. Djuric, 2019, lempod (https://blog.lempod.com/linkedin-industries-list/). Copyright 2021 by Lempod Blog.

Appendix D

Siemens Job Titles classified by OEM and end-user job titles

OEM Job Titles	EU Job Titles
VP of Engineering	VP of Engineering
VP of Engineering	VP of Operations
VP of Operations	VP of Production
VP of Production	Director of Engineering
Director of Engineering	Director of Operations
Director of Operations	Director of Production
Director of Production	Engineering Manager
Engineering Manager	Operations Manager
Operations Manager	Production Manager
Production Manager	Electrical Engineer
Electrical Engineer	E&I Engineer (Electrical and Instrumentation)
E&I Engineer (Electrical and Instrumentation)	Automation Engineer
Automation Engineer	Controls Engineer
Controls Engineer	Manager R&D
Manager R&D	Director Service
Director Service	Sustainability Officer
Sustainability Officer	Maintenance manager
Maintenance manager	Purchasing/procurement director
Purchasing/procurement director	Purchasing/procurement manager
Purchasing/procurement manager	
VP of Operations	
VP of Production	
Director of Engineering	
Director of Operations	
Director of Production	
Engineering Manager	
Operations Manager	
Production Manager	
Electrical Engineer	
Automation Engineer	

Controls Engineer
Director Sales
Sales Manager
Director R&D
Manager R&D
Director Service
Manager Service
Manager After Market
Sustainability Officer
Purchasing/procurement director
Purchasing/procurement manager

Note. *From Contact Request Template Intent List*, by Siemens, Inc., 2021 (internal documentation). Copyright 2021 by Siemens, Inc.

Appendix E

LinkedIn List of Job Functions

List of Job Functions LinkedIn
Accounting / Auditing
Administrative
Advertising
Analyst
Art / Creative
Business Development
Consulting
Customer Service
Distribution
Design
Education
Engineering
Finance
General Business
HealthCare Provider
Human Resources
Information Technology
Legal
Management
Manufacturing
Marketing
Other
Public Relations
Purchasing
Product Management
Project Management
Production
QualityAssurance
Research
Sales
Science

Strategy / Planning
Supply Chain
Training
Writing / Editing

Note. LinkedIn List of Job Functions. Job Functions to target in a LinkedIn campaign for Siemens SIAMTIC controllers are marked in yellow. Adapted from *Job Function Codes*, by Microsoft, 2021 (https://docs.microsoft.com/en-us/linkedin/shared/references/reference-tables/job-function-codes). Copyright 2021 by Microsoft.

Appendix F: LinkedIn List of Job Seniority

Table F1

LinkedIn List of Job Seniority

List of Job Seniority LinkedIn
Owner
Partner
CXO
Vice President
Director
Manager
Senior Individual Contributor
Entry
Training
Unpaid

Note. LinkedIn List of Job Seniority. Job Seniorities to target in a LinkedIn campaign for Siemens SIAMTIC controllers are marked in yellow. Adapted from *Mastering Targeting on LinkedIn*, by LinkedIn Corporation, n.d. (https://business.linkedin.com/content/dam/me/business/en-us/marketing-solutions/cx/2020/namer-pdfs/linkedin-marketing-solutions-updated-targeting-playbook-2020.pdf).

Table F2

LinkedIn Job Seniority Description

Owner	Has full or near full ownership of an organization
Partner	Has substantial partial ownership of an organization
CXO	Has direct reports and leadership responsibilities for the entire business function within an organization
Vice President	Executive management that has direct reports and leadership responsibilities for one business function or unit
Director	Multi-functional management that has direct reports and leadership responsibilities for multiple individuals
Manager	Positions that have direct reports and leadership responsibilities for a single group of individuals
Senior Individual Contributor	Individual contributor positions that do not have direct reports but have leadership responsibility, advanced knowledge, and do not require immediate guidance
Entry	Individual contributors that do not have direct reports, no leadership responsibility, no advanced expertise and contribute without immediate guidance
Training	Students, interns and trainee positions that need immediate guidance to individually contribute
Unpaid	Includes volunteer positions and positions that do not refer to a job

Note. LinkedIn List of Job Seniority Description. From *Mastering Targeting on LinkedIn*, by LinkedIn Corporation, n.d. (https://business.linkedin.com/content/dam/me/business/en-us/marketing-solutions/cx/2020/namer-pdfs/linkedin-marketing-solutions-updated-targeting-playbook-2020.pdf).

Appendix G

List of Industries Competitor Website (July, 2021)

Aerospace
Automotive & Tire
Cement
Chemical
Entertainment
Fiber&Textiles
Food&Beverage
Household&Personal Care
Infrastructure
Life Sciences
Marine
Metals
Mining
Oil&Gas
Power Generation
Print&Publishing
Pulp&Paper
Semiconductor
Water Wastewater

Note. Industries a Siemens competitor serves according to its website as of July 7, 2021. Adapted from *Industries We Serve | Rockwell Automation*, by Rockwell Automation, Inc., 2021(https://www.rockwellautomation.com/en-us/industries.html). Copyright 2021 by Rockwell Automation, Inc.

Appendix H

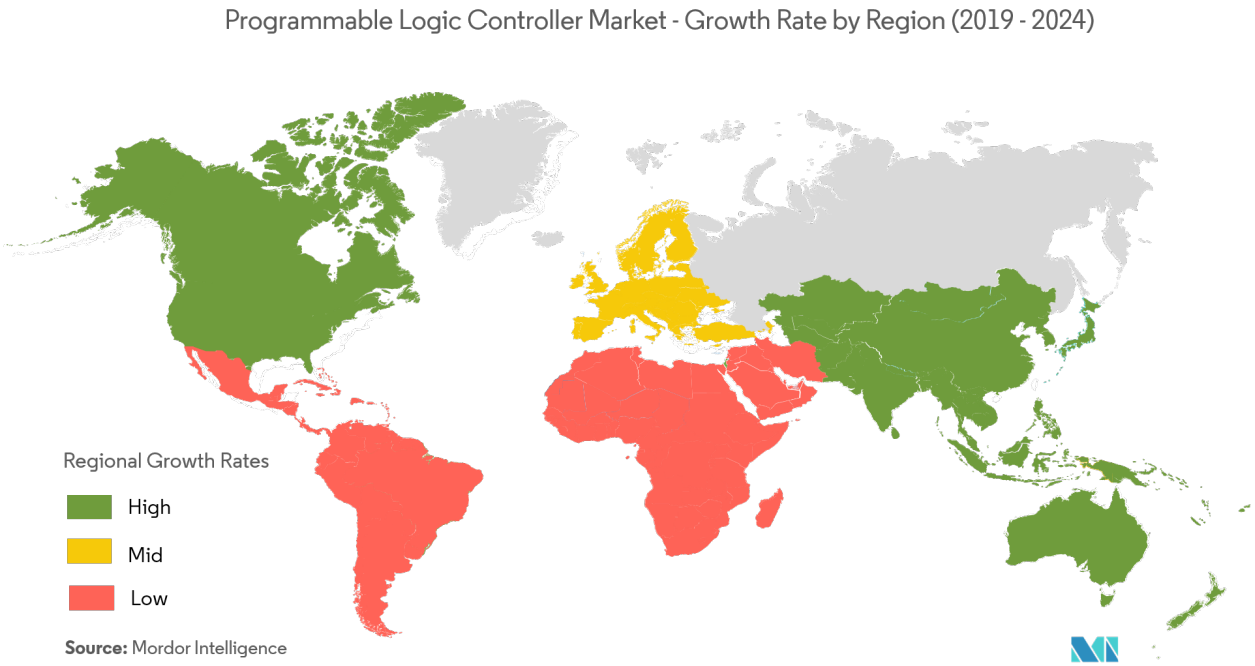
Importance of target market selection criteria for B2B marketers according to Weinstein's study (2014)

Selection criteria	*Count*	*Rated 1st*	*Rated 2nd*	*Rated 3rd*	*Overall measure*	*Attractiveness criteria (Simkin/Dibb)*
1.Opportunities in the industry	32	9	13	10	63	Occasional
2. Sustainable differentiated advantage	29	13	8	8	63	Occasional
3. Profitability	30	12	6	12	60	Top
4. Product differentiation	22	8	9	5	47	Occasional
5. Customer satisfaction	19	9	8	2	45	Frequent
6. Market size	21	5	10	6	41	Frequent
7. Ease of access of business	18	6	4	8	34	Frequent
8. Market growth	18	5	3	10	31	Occasional
9. Sales volume	10	2	5	3	19	Frequent
10. Competitive rivalry	6	0	2	4	8	Occasional

Note. From "Target market selection in B2B technology markets," by A. Weinstein, 2014, *Journal of Marketing Analytics*, 2(1), p. 63 (http://dx.doi.org/10.1057/jma.2014.6). Copyright 2014 by Macmillan Publishers Ltd.

Appendix I

PLC Growth Rate by Region



Note. From *Programmable Logic Controller (PLC) Market | Growth, Trends, Forecast (2020-2025)*, by Mordor Intelligence, 2021 (https://www.mordorintelligence.com/industry-reports/programmable-logic-controller-plc-market). Copyright 2021 by Mordor Intelligence.

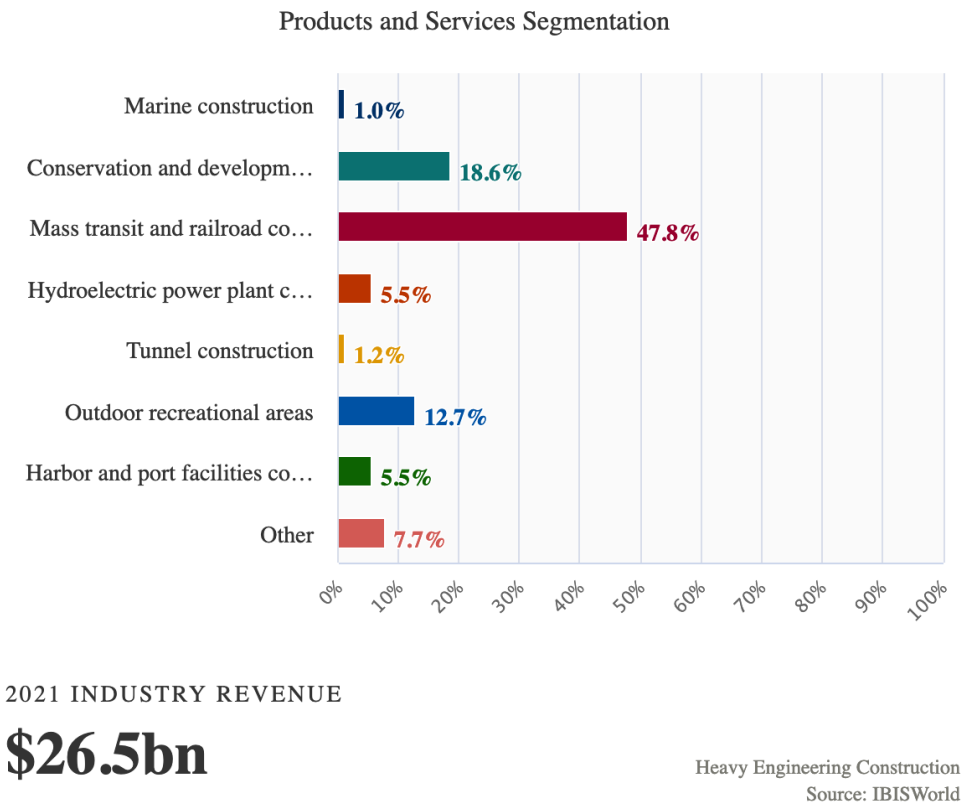
Appendix J: Email Interview Questions Siemens Distributor

- In your opinion, what are the main reasons to choose Siemens S7-1500R/H over a competitor's solution?
- Do you see any limitations of the Siemens S7-1500R/H system in the sector infrastructure – tunnels, movable bridges, rail transport?
- Are there many competitors that can fulfill the requirements in this sector? Who are the main competitors?
- How do you rate their performance compared to Siemens?
- Overall, on a scale from 1 to 5 how would you asses competition in this sector (in the US)? (1 = weak competition to 5 = strong competition)

Appendix K: Products and Markets Heavy Engineering Construction in the U.S.

Figure K1

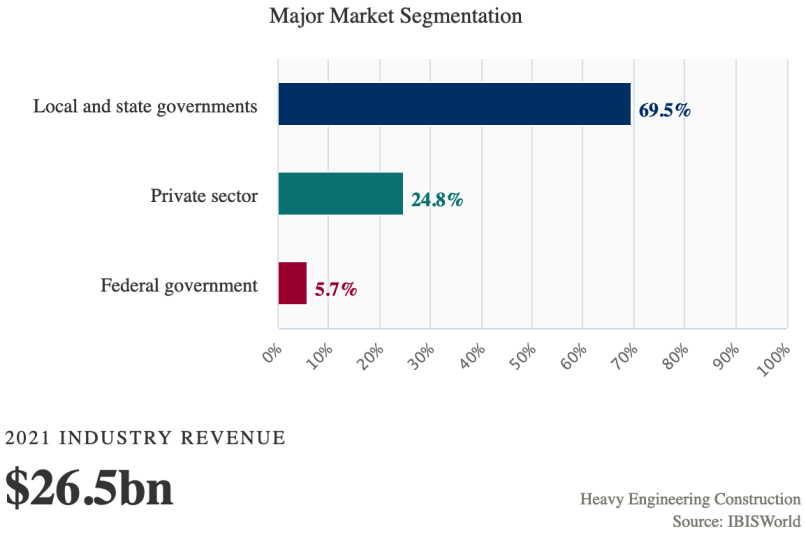
Products and Services Segmentation in Heavy Engineering Construction Industry U.S.



Note. From "23799 Heavy Engineering Construction in the US – MyIBISWorld," by J. Madigan, 2021, *IBISWorld* (https://my-ibisworld-com.iris.etsu.edu/us/en/industry/23799/products-and-markets). Copyright 1999-2021 by IBIS World.

Figure K2

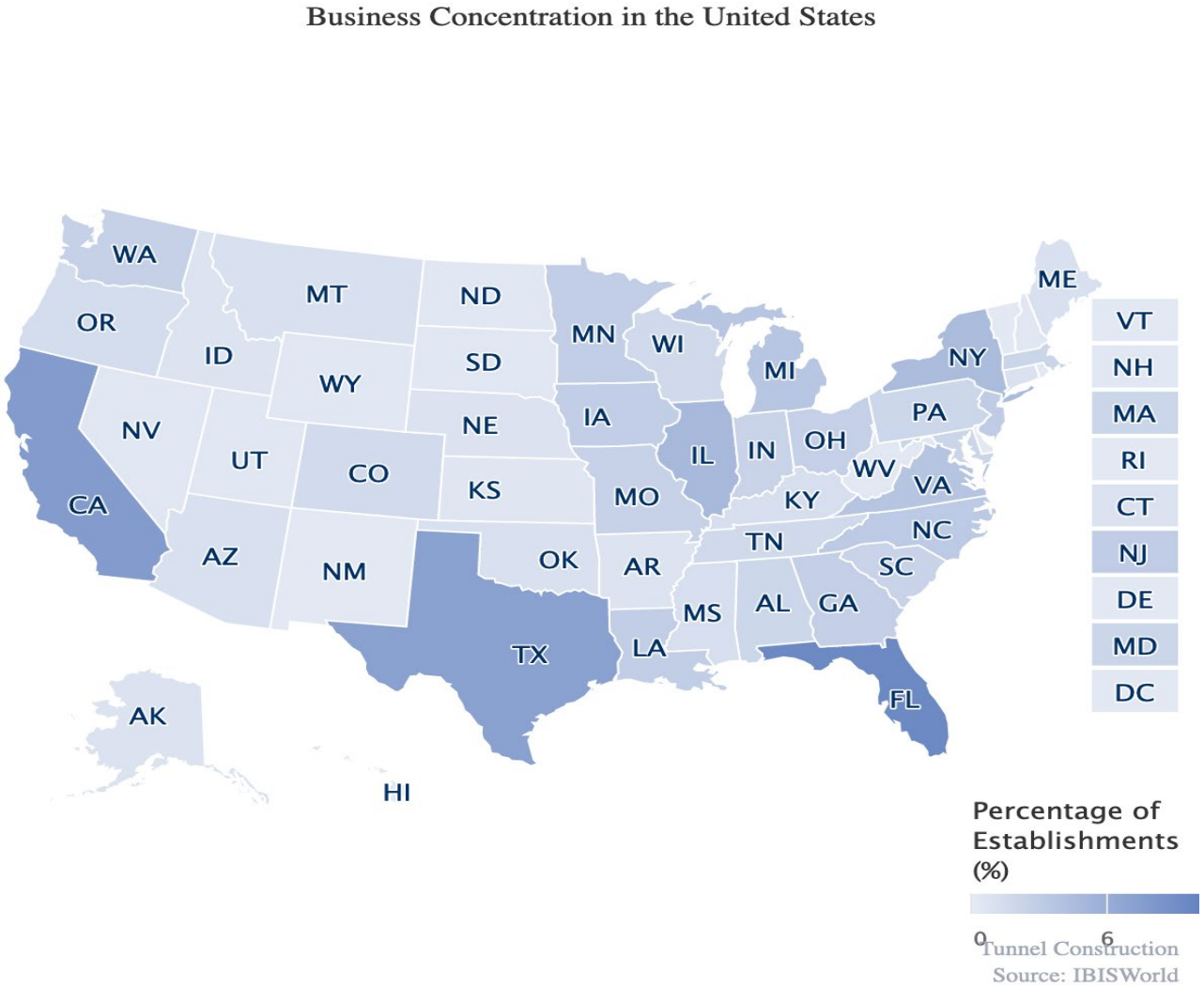
Major market segmentation in Heavy Engineering Construction Industry U.S.



Note. From "23799 Heavy Engineering Construction in the US – MyIBISWorld," by J. Madigan, 2021, *IBISWorld* (https://my-ibisworld-com.iris.etsu.edu/us/en/industry/23799/products-and-markets). Copyright 1999-2021 by IBIS World.

Appendix L

Regional Business Concentration Tunnel Construction Industry in the U.S.



Note. From "23799 Heavy Engineering Construction in the US – MyIBISWorld," by J. Madigan, 2020, *IBISWorld* (https://my-ibisworld-com.iris.etsu.edu/us/en/industry-specialized/od4654/products-and-markets). Copyright 1999-2021 by IBIS World.

Appendix M

Market Segment Assessment Matrix by AIM Institute

Figure 1: Screen Market Segments for Attractiveness

Market Segments or Sub-Segments	Attractiveness Criteria						
	1. Size of Revenue Opportunity	2. Market Segment Growth	3. Market Segment Profitability	4. Unmet Customer Needs	5. Likely Power of Value Proposition	6. Likelihood of Technical Solution	7. Current Market Presence
Marine Coatings	B	C	B	A	A	C	C
Maintenance Coatings	A	C	B	B	B	C	C
Aircraft Coatings	A	A	B	A	A	B	B
Bridge Coatings	C	B	A	A	B	C	B
Railcar Coatings	B	C	C	C	A	B	C

A : Very Attractive
B : Moderately Attractive
C : Unattractive

Note. From *B2B Market Selection: A Critical Step for Success*, by D. Adams, 2017, The AIM Institute (https://theaiminstitute.com/organic-growth/b2b-market-selection/). Copyright 2021 by The AIM Institute.

Appendix N: Template Target Market Assessment

Decision Context & Goal:
Evaluation of End User / OEM target markets for product family x in the US. The goal is to prioritize according to segment attractiveness and further investigate and map most attractive customer segments. While the matrix can provide an overview, expert judgment is still required.

		SEGMENT ATTRACTIVENESS CRITERIA											
		Industry Related		Evaluated for a Product Family									
		Industry Growth	FA Business	Segment Size	Estimated current segment presence	Estimated achievable marketshare	Estimated expected segment profit	Competitive Intensity	Likely Power of Value Proposition	Ease of Segment Access	Strategic Synergy	Total	Comments
		+, - or =	(Yes/No)	(in revenue)	(in%)	(in%)	(in revenue)	15%	40%	30%	15%		
SEGMENTS BASED ON EU/OEM INDUSTRIES	NAICS INDUSTRY							On a scale from 1 to 5 in regards to the segment (1=unattractive to 5=highly attractive)					
												0	
												0	
												0	
												0	
												0	
												0	
												0	
												0	

Results:

Appendix O: Checklist Segmentation Variables and Template to Guide Evaluation

Market Segmentation Criteria	Discussions	Evalution based on Criteria				Comments
		Measurability	Accessibility	Substantiality	Responsiveness	
Product Use						
Industry and Application						
Organization Size						
Organization Location						
Organization Ownership						
Structure of Procurement						
Customer Type New/Existing						
Organization Type						
Jobs-to-be-done/Customer Pain Points						
Buying Criteria						
Value in use						
Purchasing Strategy						
Personal Characteristics/DMU Characteristics						
Sales Funnel Stage						
Type of Value Chain Partner						
Etc.						

Degree of desirability for segmenation variables
+ Highly desirable
= Moderately desirable
- Lowly desirable

- Measurability: Information about the characteristics of a particular buyer is existent or obtainable to a certain degree

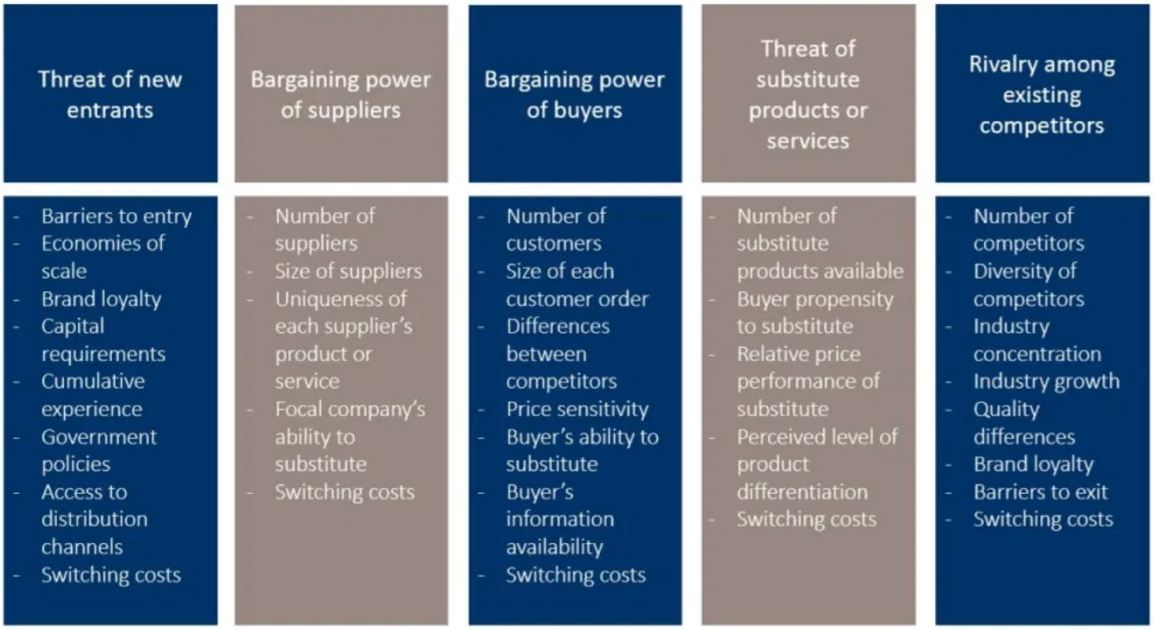
- Accessibility: Degree to which an organization can effectively use its marketing efforts on chosen segments. For example, a segment characteristic is only reasonable if marketing media or internal resources are available to target the segment accordingly

- Substantiality: Degree to which the segments are large and profitable enough to justify separate marketing activities. This also requires certain time stability of characteristics

- Responsiveness: Difference in segments' buying behavior and in their responses to different elements of the marketing mix

Appendix P

Template and Considerations Porter's Five Forces



Note. From *Porter's Five Forces*, by Business-to-you, 2016 (https://www.business-to-you.com/porters-five-forces/).

VITA

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Professional Experience	Target Marketing Specialist, Siemens Industry, Inc., Alpharetta, Georgia, 2021
	Graduate Assistant, East Tennessee State University, College of Business and Technology, 2020-2021
	Key Account Manager, Ansmann AG, Assamstadt, Germany, 2015-2019
	Junior Key Account Manager, Ansmann AG, Assamstadt, Germany, 2013-2015
	Junior Project Manager, Ansmann AG, Assamstadt, Germany, 2012-2013
Honors & Awards	Outstanding Graduate Student by the Department of Engineering, Engineering Technology, & Surveying for Superior Academic Achievement, East Tennessee State University, 2021