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Faculty of Business Economics

Master of Management

Master's thesis

An Application of the Customer Value Index (CVI) in the Construction Industry: Partition Wall Systems

MOHAMMAD MAHDI ROSTAM NIAKAN KALHORI

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization
International Marketing Strategy

SUPERVISOR :

dr. Bieke HENKENS



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Preface

I am delighted to present this thesis, which explores the concept of customer value in the construction industry. With a background in civil engineering and a keen interest in marketing, I embarked on this research journey with the aim of shedding light on an area that has been widely neglected: marketing in the construction sector. Throughout my academic and professional journey, I have witnessed first-hand the significant role that marketing plays in determining the success of businesses in various industries. However, it became apparent that the construction industry often overlooks or undervalues the importance of marketing management. This realization sparked my curiosity and passion to delve deeper into this topic and contribute to the understanding and development of marketing practices in construction.

I want to express my heartfelt gratitude to my parents, whose support and encouragement have been instrumental in my academic pursuits. Their belief in me and constant encouragement have been the driving force behind my achievements.

I am also deeply grateful to my loving wife, whose patience, understanding, and unwavering support have been invaluable throughout this journey. Her encouragement and belief in my abilities have been a constant source of motivation.

I am particularly grateful to my supervisor, Prof. Dr. Bieke Henkens, whose guidance, expertise, and unwavering commitment to excellence from Hasselt University have been invaluable throughout the research process. Her insightful feedback, constructive criticism, and invaluable guidance have significantly shaped the direction and quality of this thesis.

I am also indebted to the participants who generously shared their time and knowledge during the interviews, contributing essential insights to this research. Their willingness to engage in meaningful discussions has been pivotal in understanding customer value in the construction industry.

I hope this research, conducted during my time at Hasselt University, will contribute to advancing marketing practices in the construction industry and pave the way for further exploration in this field.

Mohammad Mahdi Rostam Niakan Kalhori,
Diepenbeek, June 6, 2023

Summary

Customer value is defined as the customer's trade-off between the perceived benefits and costs (Zeithaml, 1988), a significant factor contributing to a competitive advantage (Woodruff, 1997). In 2019, Leroi-Werelds focused on one of the most often-used customer value typologies introduced by Holbrook (1994). She brought the previously established value types up to date and established new value types. The new customer value typology included 24 value types, including 14 positive and ten negative value types. She suggested using the "Customer Value Index" or CVI to measure customer value. The CVI is a weighted composite of the pertinent positive and negative value types associated with a specific object, and it is advised to do exploratory qualitative research to identify the relevant value types. Furthermore, combining exploratory qualitative research with the value proposition and the list of potential value types is recommended to assure content validity. By incorporating these methods, an exhaustive and precise customer value evaluation can be accomplished (Leroi-Werelds, 2019).

The construction industry is still insufficiently understood, with little agreement on its distinguishing characteristics. This industry can only function successfully and efficiently if its unique features are recognized (Ofori, 2015). Moreover, marketing management is a crucial aspect often overlooked or undervalued by numerous companies operating within the construction industry, despite its significant role in determining success (Mokhtariani et al., 2017). Similarly, extant literature indicates that marketing studies in the construction industry have not received adequate attention from researchers (Smyth et al., 2018; Stremersch et al., 2022). More specifically, at the center of all marketing activities is customer value, a critical element that demands the unwavering attention of every marketing researcher (Holbrook, 1999b).

This master's dissertation aimed to investigate and develop an outline for a scale development for measuring customer value in the context of the construction industry, with a specific focus on partition wall systems, as a response to the necessity and relevance of context-specific studies (Stremersch et al., 2022). The research seeks to address the problem of the lack of a widely agreed-upon scale for evaluating customer value, particularly in the construction sector. For this reason, the aim was to understand the values that the stakeholders of the projects in two main phases, design and construction perceived, as well as the values they consider for the projects and, ultimately, the end-users in the decision-making process.

The research methodology employed in this study involves qualitative research through nine semi-structured in-depth interviews with key stakeholders, eight in Belgium and one in the Netherlands, including architects, project leads, project managers, etc., who are involved in the design and construction phases of projects. The laddering technique was utilized to gain a holistic view of the values perceived by the interviewees and enable a comprehensive understanding of customer value until no additional value types are mentioned. For this aim, first, we asked what kind of attributes the customers considered important regarding partition wall systems in the whole process, and then for each mentioned attribute was asked to explain why it is important to them. By exploring their perspectives, the study aimed to identify and categorize the relevant positive and negative value types associated with partition wall systems in the construction industry. Therefore, this qualitative data

analysis approach allowed us for a nuanced exploration of customer value and develop an outline for a scale that accurately captures its dimensions.

Our data analysis comprised four stages, involving the cleaning of received data and the identification of relevant quotes as illustrative evidence. Each illustrative evidence was coded (1st order), and the relevant codes were categorized into one themes group (2nd order). Through a combination of open coding and thematic coding techniques, we successfully identified a total of 37 customer values perceived by various project stakeholders during the design and construction phases of partition wall systems. These values were then categorized using an updated Customer Value Index (CVI) typology. The analysis revealed the presence of seven positive value types, namely "convenience", "excellence", "aesthetics", "control", "relational benefits", "ecological benefits (ethics)", and the newly identified value type of "trustworthiness". Additionally, five negative value types emerged, including "price", "time" "effort", "performance risk" and "physical risk". These findings shed light on the complex nature of customer value within the construction industry and provide a solid foundation for developing a comprehensive scale that incorporates these diverse dimensions.

The study addresses the lack of a comprehensive scale by proposing an outline for scale development using the updated customer value typology. This outline includes all 37 customer values identified in the research, which fall into the 12 customer value types of the CVI. By providing this practical tool, this research aimed to facilitate further analysis and measurement of customer value in the construction industry, specifically in relation to partition wall systems. These findings contribute to both theoretical and managerial aspects of the industry.

The theoretical contribution of this study lies in expanding the understanding of customer value in the construction industry. Firstly, we validated and updated the typology of the Customer Value Index (CVI), originally introduced by Leroy-Werelds (2019) as an update to Holbrook's (1994) customer value typology. By exploring 37 customer values perceived by various stakeholders in the design and construction phases of projects and classifying them into the CVI value types, we revealed the relevance of 11 CVI value types, including adding the new positive value type, "Trustworthiness". By identifying those relevant positive and negative value types, the study contributed to the understanding of customer value and its implications in the industry. Secondly, the study fills a gap in marketing context-specific research within the construction industry, particularly regarding customer value. The complexity of the industry, the involvement of different actors in different phases of projects, and the varied customer values across projects necessitated exploration of customer value in partition wall systems. Lastly, the proposed outline for scale development provides a practical tool for further research, enabling comprehensive measurement and assessment of customer value.

The managerial contribution of this study offers recommendations for different stakeholders in the construction industry. Project stakeholders, including design and construction actors, can benefit from the findings by considering all identified value types in the decision-making process. Project actors can enhance the value creation process by understanding the holistic customer values and aligning them with choices for partition walls. Therefore, particularly in the decision-making process of partition wall systems, they can refer to the research findings to precisely examine the customer value in this context. Additionally, manufacturers, as service providers, can evaluate their offering systems based on the identified customer value types to align their value propositions with customer perceptions.

Considering literature, the study also proposes a guideline for firms to analyse customer value types, measure their importance, and adjust their value propositions accordingly which the findings of this research can have a key role in that process.

The study acknowledges certain limitations and suggests avenues for future research. One limitation is the lack of end-user perspectives, which should be included in future studies to capture their insights on customer values. Additionally, exploring other personas involved in the partition wall system development process and extending the research to different countries would account for cultural variations and provide a more comprehensive understanding of customer values. Future research should also focus on developing a multi-item scale to measure customer value types and investigate their relationship with important outcomes. Therefore, it is recommended that this study's explored customer value types and their relationship with key outcomes, like satisfaction and purchase intention be measured and validated by doing quantitative analysis research. Furthermore, we recommend future studies also do more context-specific research in the construction industry, focusing on different related objects such as smart homes and digital tools based on the CVI.

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1. Introduction

Customer value (cv) is typically described as a relativistic preference explaining how customers interact with different items, including products, services, places, events, and ideas (Holbrook, 1999). The most crucial elements of value are the exclusive benefits that customers receive from products or services (Wu & Li, 2018), which was introduced as a trade-off between benefit and cost by Zeithaml (1988). According to Leroi-Werelds (2019), creating customer value must be the reason for the firm's existence. Indeed, its success has been acknowledged as a significant source of competitive advantage and the core of business strategy for many years. However, it is vital to revise the concept of customer value because of further developments in theory and practice, especially regarding technology. In 1999, Holbrook introduced customer value typology that included eight different value types, which has received a growing amount of attention (Gallarza et al., 2017) and has been applied by many researchers of customer value in their studies (Leroi-Werelds, 2019). Later, Leroi-Werelds (2019) identified new value types, updated the Holbrook typology, and included fourteen positive and ten negative ones. She stated in her article that the updated typology was confirmed by Holbrook as well. Holbrook's typology primarily emphasizes the positive side of value and its benefits for the customer. The value type "efficiency" is the only term that implicitly considers the trade-off between benefits and costs. However, the new typology offered by Leroi-Werelds (2019) consists of negative value types such as time and price and positive ones. Of course, the negative value types are not the opposite of positive ones but should be considered separately in the research (Cenfetelli & Schwarz, 2011).

Many researchers have proposed different scales for measuring customer value, and some overlap can be seen. However, a widely agreed-upon scale for measuring customer value has yet to be reached (Leroi-Werelds, 2019). This is why some researchers often complained about the lack of precise measuring tools for customer value (Cronin, 2016; Gallarza et al., 2017). Leroi-Werelds (2019) introduced Customer Value Index (CVI) to measure customer value. She said that the CVI is a weighted composite of the positive and negative value types that are important to a certain item. She suggested that as CVI encompasses all the positive and negative value types, some exploratory qualitative research should be done to decide which ones are relevant to a specific object. Therefore, applying this framework to each research study should be adjusted to the focused product or service, and some value types might not be relevant in each case.

Some research applied customer value typologies to a particular industry. For example, considering Holbrook value typology, Gallarza et al. (2017) focused on hotels to understand the relevant customer value types in the tourism industry. Subsequently, Zein Papathymiopoulos (2020) did qualitative research for their thesis to apply the updated customer value types (CVI) to the tourism industry to understand the customer perception toward hotel amenities and create a measurement scale for future research in this industry. Since CVI was introduced in 2019, only a few studies have applied it to different fields.

In this study, we chose the construction industry to apply the customer value index (CVI) because, according to Stremersch et al. (2022), which concentrated on context-specific studies, this

industry needs more attention amongst marketing studies. This industry is a big part of the economy and essential to the country's social and economic growth (Ofori, 2015). It faces challenges such as energy reduction and sustainability, requiring new building envelopes that combine excellent thermal performance with simple, quick implementation, sound, seismic structural and fire resilience, and waste recycling capabilities (Atsonios et al., 2019). More specifically, partition wall systems are thought to be one of the essential parts of the interior space of a building, and much research has been done on these crucial parts of the interior space of buildings (Mohandes et al., 2015). The main intention of this thesis is to provide an outline for scale development tool that explains how customer value exists in the expectations and evaluations of the customers toward the partition wall systems by considering CVI and the updated value typology of Leroi-Werelds (2019). Therefore, all relevant positive and negative value types will be identified through semi-structured in-dept interviews with different project stakeholders in the design and construction phases of the projects, such as architects and contractors. To get a holistic view of the values that these stakeholders of projects perceive. Leroi-Werelds (2019) suggested the laddering technique in the interview process; by the time we do not receive the new customer value mentioned in the interview, we will continue doing the interviews.

Therefore, in the end of the study, by considering all the explored value types and applications of the CVI, we proposed an outline for the scale development of the customer value, which is essential to the different stakeholders of the design and construction phases. A valid scale, will give future quantitative researchers the foundation they need to go ahead and do further research (Kock et al., 2019). When a suitable instrument is available, researchers should incorporate different value types in their empirical study to explore their influence on pre-purchase phases while making decisions and post-purchases relevant to customer assessments and evaluating the value (Leroi-Werelds, 2019).

This thesis will first explain the literature review focusing on customer value and the framework we will use to identify all the relevant value types for the construction industry's stakeholders and scale development. Next, we will explain the research design to elaborate on the research method based on the interviews with the stakeholders from the design and construction phases. Then, the results will be discussed according to the collected data in the interviews. After data analysis, we will discuss the scale development outline in the discussion part, accompanied by theoretical implication, managerial implication, limitations, and some recommendation for the future studies.

2. Literature Study

2.1 Customer value

The term "customer value" has been given a variety of interpretations by different researchers. Zeithaml (1988) gave one of the earliest definitions of consumer values as a trade-off between benefit and cost, meaning that the customer's overall opinion of a product's usefulness was based on what they thought they got in exchange for what they gave. Gale (1994) saw customer value as a perceived quality adjusted for the relative pricing of the goods, where perceived quality is the customer's impression of your product compared to that of your competitor. Dlouhy et al. (2018) Stated that customer value is the attributes, attribute performances, and consequences of them, contributing to fulfilling the customer's goals. Treacy and Wiersema (1995) considered customer value as the total of benefits received less the costs, both tangible and intangible, a customer incurs while acquiring a good or service. Meanwhile, numerous authors have highlighted the complexity of defining consumer value (Piercy & Morgan, 1997; Woodruff, 1997). However, there is an agreement that Customers' perceptions of value, rather than suppliers' assumptions or intentions, are what ultimately matter, according to the literature (Woodruff & Gardial, 1996; Zeithaml, 1988).

2.1.1 Theoretical background

There are so many relevant definitions of customer value, but in 2019, Leroi-Werelds, following a comprehensive review of the relevant academic literature, extracted six fundamental characteristics (FCs) of customer value and further to the conclusion of the Service-dominant logic (SDL) and Service logic (SL) discussions, a seventh FC was introduced.

FC1: Customer value implies an interaction between a subject and an object

According to Holbrook, 2014, customer value results from the interaction between a product or service and the customer. Typically, the subject is the consumer or customer, and the object can be any product or service (Leroi-Werelds, 2019). It indicates that the product, including building materials, cannot have value if there is no buyer to apply for or install them.

FC2: Customer value involves a trade-off between the benefits and costs of an object

Almost all studies of customer value consider Zeithaml's (1988) framework or trade-off model as a starting point for determining which components to include. Benefits, or what consumers obtain from the trade, and cost, or what customers give up, are often included in most concepts (Ruiz et al., 2008). The benefits are the positive consequences of utilizing a product, interacting with a service, visiting a shop, participating in co-production, etc., while the costs are the negative consequences (Leroi-Werelds, 2019). The customers in a construction project can benefit from applying the material with different specifications but costs such as price or effort.

FC3: Customer value is not inherent in an object but in the customer's experiences derived from the object

Value creation is described as the customer's creation of value-in-use, in which the consumer constantly participates. This viewpoint is consistent with the concept of value-in-use, which suggests that actual value only emerges during use, as weight is not generated and provided by the supplier but rather arises during consumption in the customer's value creation (Grönroos & Ravald, 2011). Therefore, customer value does not exist in the object or brand acquired but in the consumption and experiences received (Leroi-Werelds et al., 2014). Following the first characteristic, customer value is the interaction between a product and the consumer. However, no value for the end-user of the building will be created until the consumer does not apply the purchased material in the construction project.

FC4: Customer value is personal since the customer subjectively determines it

Even though customer value and customer values are two different ideas, they are connected in two ways (Holbrook, 1999b; Woodruff, 1997). Therefore, according to Leroi-Werelds (2019), these two terms are different ideas yet interact. Customer values considered personal characteristics of the customer, such as status, affect the value perceptions. However, customer value can be a way to help customers get what they want based on their values. Holbrook (1994) argued that customer value is personal and individual, and each consumer has a unique perspective of value based on their own needs, expertise, abilities, prior experiences, and/or monetary capacity. For example, a customer who cares much about the building with luxury material. In contrast, the other customer might prioritize the excellence of the material used in the construction.

FC5: Customer value is situation-specific

Customer value depends not only on the customer but also on the situation, such as the time, place, or circumstances (Holbrook, 1999). It means that customer value is dependent on the situation. The degree of value received from use is contingent on the social, geographical, temporal, and physical settings in which use happens and how these circumstances change (Grönroos & Voima, 2013b). For instance, the importance of a high-level seismic behavior of a partition wall in a region with a high probability of an earthquake can differ from an area where an earthquake is less probable to occur.

FC6: Customer value is multidimensional and consists of multiple value types

In response to the criticism that customer value is too complex to be captured by a one-dimensional measurement method (Ruiz et al., 2008), so-called multidimensional approaches have been proposed, which view customer value as comprising multiple interrelated components or dimensions (Sánchez-Fernández & Iniesta-Bonillo, 2007). Therefore, customer value is multidimensional, but there are different types and conceptual opinions of customer value among the researchers (Leroi-Werelds, 2019). A specific product or service in the construction industry will have different potential value types, like convenience, excellence, etc.

FC7: Customer value is (co-)created by the customer using resource integration

Service-dominant logic (SDL) asserts that value is created by the actions of numerous participants, most of whom are unaware of one another but contribute to each other's well-being (Lusch & Vargo, 2018). It means that the customer does value (co-)creation by integrating the resources, such as products or services, that the service provider is providing with other resources and skills (Leroi-Werelds et al., 2017).

SDL states that value is always co-created by different actors and evaluated by specific beneficiaries; it means that the firm is a service provider that can only offer the value proposition, not the value. Even though the value is always co-created, it is constantly evaluated by a specific recipient (Lusch & Vargo, 2018). For example, by purchasing and utilizing a specific construction material, the customer benefits (customer value), and the business that produces the material gain revenue. Moreover, there could be a benefit for society if the material is environmentally friendly. Conforming to Smyth et al. (2016), recent advancements in the SDL provide significant hurdles in generating value propositions at the business development management–bid management interface, even though marketing is a neglected field of construction research.

Furthermore, according to service logic (SL), value creation improves consumer well-being and mainly focuses on the value for the customer. In contrast, it is acceptable that value for the firm is another side of value creation (Grönroos & Voima, 2013a). According to Grönroos and Voima (2013a), value co-creation is the interaction between the service provider and customer in the value-creation process. The customer (co-) creates value by combining the resources offered by the service provider (e.g., products and services) with other resources and abilities and independently transforming the potential value-in-use provided by the provider to real value-in-use.

For instance, a company that manufactures partition wall materials acts as a facilitator in the value-creation process. Contractors, who are the customers (B2B), interact with the producer, integrating the materials with other resources to create partition wall systems. The contractor provides potential value in the value-creation process through the partition wall system, and the end-user, residing in the building, enhances its value by integrating it with other resources to create value-in-use.

In the industrial market, customer value is crucial for attracting clients and fostering client loyalty. It is widely regarded as the cornerstone of successful business operations, particularly in the B2B market. This is due to the fact that B2B customers are interested in both buying goods and services and customer value (Mai & Liao, 2021). Menon et al. (2005) focused on the context of Business-to-business relationships and the concept of customer value in this relationship. Following the definition of customer value as a trade-off between benefit and cost, Menon et al. (2005), p.5, defined customer value as "a business customer's overall assessment of the utility of a relationship with a vendor based on perceptions of benefits received and sacrifices made." Based on the literature, they considered two types of benefits, core benefits, and add-on benefits. The core benefits are defined to what extent the supplier offers a set of minimum attributes based on the organization's buyer's need, which is considered a 'must' in their relationship. In contrast, add-on benefits are known as "thrill factors" and are not absolutely required, but assistance to

the customer to select the suppliers amongst some qualified ones. On the other hand, according to the relationship between the buyer and seller, they categorized costs as "direct purchase price," which is the spent money by the buyer, and "acquisition costs," which is defined as the cost of acquisition stages and storing the product and "operations costs" defined as the costs of different activities such as research and development, internal coordination, and any kind of costs in the routine operations of their business.

Menon et al. (2005) argued that according to the literature, "product quality" meaning that how well a delivered product meets the needs of the customer, and "service quality" is considered a measure which how effectively the given technical and business process service fulfils customer expectations in terms of structure, procedure, and outcome, are two major and vital characteristics of customer value when it comes to B2B relationships. Menon et al. (2005) showed that benefits in the cost-benefit trade-off definition of customer value are more important than costs in terms of value perception. Regarding the costs, operation cost needs to get more attention from the business to increase customer value. Moreover, the supplier should not just focus on the product or the process but also focus on the relationship with the buyer in line with the increase of trust in customers and show customers their commitment. Likewise, they concluded that concerning the relationship between two businesses, a joint working arrangement will increase the value that customer perceives.

2.1.2 Customer Value Typology

Over the past years, several value typologies have been introduced by researchers in the customer value domain. According to Gallarza et al. (2017), the customer value typology which Holbrook (1994) proposed has been widely acknowledged as the most effective one. This typology developed by Holbrook (1999b) (see Table 1) is based on these three underlying dimensions:

- **Extrinsic vs. Intrinsic value**

When a product or service is employed for its practical contribution to accomplishing another objective, it has extrinsic value. On the other hand, intrinsic value occurs when consuming is a primary objective.

- **Self-oriented vs. Other-oriented**

When the value is self-oriented, the consumer considers a particular feature of using the good or service exclusively for personal gain. However, it is categorized as Other-oriented when they use it for others or influence them.

- **Active vs. Reactive value**

It suggests that a customer determines value by using an item directly. However, when the value which people feel is indirect and instead comes from understanding, appreciating, or reacting to a thing is reactive.

Efficiency, excellence, status, esteem, play, aesthetics, ethics, and spirituality are eight different categories of consumer value that Holbrook (1999a) established using the three dimensions above.

		Extrinsic	Intrinsic
Self-oriented	Active	Efficiency (O/I, convenience)	Play (fun)
	Reactive	Excellence (quality)	Aesthetics (beauty)
Other-oriented	Active	Status (Success, impression management)	Ethics (Justice, virtue, morality)
	Reactive	Esteem (Reputation, materialism, possessions)	Spirituality (Faith, ecstasy, sacredness)

Table 1: Holbrook's Customer Value Framework (1999)

According to Holbrook's matrix, for example, "efficiency," the only value type, implicitly points to the trade-off between cost and benefit (Leroi-Werelds, 2019), denotes the active role of consumption plays in achieving a self-oriented goal driven by extrinsic motivation. It is defined as the contrast between what a customer gets from a service or product and what the consumer contributes in return, which can be money, time, or effort that they make (Holbrook, 1999a). The method of Holbrook is the most complete since it accounts for the economic, social, hedonistic, and altruistic aspects of perceived value. Despite its intricacy and diversity, it has limits as the specific forms of value, such as ethical and spiritual value, is difficult to capture due to the structure's complexity (Sánchez-Fernández & Iniesta-Bonillo, 2007).

Although Holbrook's typology has been acknowledged as having the most significant impact (Gallarza et al., 2017), other researchers tried to propose different typologies. In 2019, Leroi-Werelds proposed an updated value typology based on Holbrook's framework and also considered the findings of other researchers, resulting in the following typology. Leroi-Werelds (2019) stated that Morris B. Holbrook approved the new value typology, comprising 14 positive and ten negative value types. She emphasized that, due to the situation-specific nature of customer value, not all value types are appropriate or useful in every setting. Therefore, the recommended value typology is a list of all potential value categories, and it should be determined for each study topic that is applicable.

Leroi-Werelds (2019) updated efficiency, play, spirituality, excellence, and ethics. 'Efficiency' is replaced with 'convenience' and 'play' with 'enjoyment,' particularly when the product or service is associated with new technology, according to De Keyser et al. (2019) and Van Belleghem (2017). Instead of "spirituality", the value type "escapism" is suggested as it is more in line with recent research on value (Gallarza et al., 2017) and as it fits more with business contexts. In the new value typology, two terms are introduced instead of "ethics," which are "ecological benefits" and "societal benefits," based on the finding of Sudbury-Riley and Kohlbacher (2016).

In addition to the mentioned update, Leroi-Werelds (2019) added five new value types more than the Holbrook typology. "Personalization" added as Huang and Rust (2017) say that it means making the service fit the needs of each customer. This is especially important with new

technologies like big data analytics, AI, IoT, and service robots. Also, the typology includes "control," which refers to how much a customer can change the way a service is delivered or the result.

Furthermore, based on the "epistemic value" mentioned in the work of Sheth et al. (1991), the value type "Novelty" is introduced. It should be noted that when customers experience something completely new, like being served by a robot or trying VR in a store, it can make them curious, give them something new, or satisfy their desire to learn, but once people get used to these new technologies, the novelty effect goes away (Flavián et al., 2019; Loureiro et al., 2019). Moreover, Leroi-Werelds (2019) added "Relational benefits" to the new typology and stated it is in contexts with human interaction. According to Wirtz et al. (2018), new technology, such as service robots, since they lack the authenticity and genuineness of a person, might have a detrimental effect. In addition, "social benefits" was added based on the relationship between customers, which is relevant to social contexts like collaborative consumption (Leroi-Werelds, 2019). Based on Holbrook's typology, empirical works often inevitably included price, time, and effort as a part of the value type "efficiency" as this is the only one considered the trade-off between benefit and cost (Leroi-Werelds et al., 2014; Willems et al., 2016). This is why Gallarza et al. (2017) see this positive bias as the most significant drawback of Holbrook's typology since it ignores the other research that stated customer value is a trade-off between benefit and cost. Consequently, Leroi-Werelds (2019), by considering the second fundamental characteristic and the fact that customer value involves a trade-off between the benefits and costs of an object, and based on the previous research (Cronin, 2016; Lin et al., 2005; Woodruff, 1997), included ten negative value types in the updated typology: price, time, effort, privacy risk, security risk, performance risk, financial risk, physical danger, ecological costs, and social costs.

Price, which refers to the amount of money that must be given up in exchange for an item, comes up in conversations about negative values more often than any other (Gallarza et al., 2017). It is also important to remember that negative value types are not just the opposites of positive value types but separate structures deserving of their consideration (Cenfetelli & Schwarz, 2011).

As it was mentioned, the new typology includes the previously described 14 positive and ten negative value categories. Because of the typology's relevance, in Table 2 (positive value types) and Table 3 (negative value types), we will go into further detail to mention the basic idea and description of each value type according to Leroi-Werelds (2019), as well as a possible example of each regarding the construction industry, and partition wall systems.

Positive value types	Description	An example of the case of the partition wall system
<i>Convenience (Efficiency)</i>	It implies how much the customer thinks the product makes their life easier	How easy is it to install a partition wall system
<i>Excellence</i>	The degree to which the object is of high quality. Depending on the situation, this could be about the quality of the product or service or both	The high-quality material used in the construction of the partition wall system
<i>Status</i>	It makes a good impression on others and, as a result, leads to being accepted by society	To what extent the partition wall system gives credit to the building because of its specific design or any particular feature
<i>Self-esteem</i>	It affects the customer's satisfaction or how they feel about themselves in a good way. How a customer's attitude depends on this system	A customer who uses a system with a high-quality system or more sustainable material is more satisfied with their choice
<i>Enjoyment</i>	When a customer uses a product or service, they have fun, are happy, and feel joy	It is related to the facilities related to the partition wall system such as its color, that can bring happiness and joy.
<i>Aesthetics</i>	Customers are drawn to the product or service because of how it looks and feels. These include color and layout, which can affect all of the senses like sight, smell, touch, taste, and hearing	It is the attractiveness of a partition wall in terms of its design, color, etc.
<i>Escapism</i>	The degree to which the product enables the user to relax and escape from their daily routine	It can be the feature of the wall with high sound insulation that lets the end-user be free of annoying noises
<i>Personalization</i>	It is changed to fit each customer's needs.	To what extent can the system be tailored to the specific building type

Control	The customer can make the object do what they want. This includes various things, such as the process or outcome's content, timing, and/or order	The contractor can control the partition wall system for any purpose it wants
Novelty	The degree to which a product or service stimulates curiosity and satisfies the need for knowledge (e.g., wanting to know more about it). This value type only impacts new items, such as new technologies	This type of partition wall is relatively new to the market and has innovative features that make customers curious about it
Relational benefits	Using the item will result in a strengthened connection between the service provider and the customer	It is related to the relationship between the actors and the provider (producer)
Social benefits	Use of the object will enhance relationships with other consumers	The relationship between different stakeholders, for example, a contractor with other customers like end-user and architect
Ecological benefits	The degree to which the object contributes positively to the environment's overall well-being and nature	To what extent the material used for the systems is environmentally friendly
Societal benefits	To what extent the object contributes to the well-being of society. Fairtrade and employee fairness are examples of Corporate Social Responsibility efforts	The customer looks at the producer that how its activities impact the society

Table 2: Positive value types, adapted from customer value types of Leroi-Werelds (2019)

Negative value types	Description	An example of the case of the partition wall system
Price	The degree to which the thing is expensive	To what extent is a particular type of partition wall system material costs
Time	To use the object, the customer needs time for preparation, usage, acknowledgment, etc.	How long does the construction system, such as the partition walls, take to be constructed
Effort	To use the object, the customer must make an effort to prepare, use, acknowledge, etc.	The needed effort to find the proper system or construct that system
Privacy risk	The extent to which the object's usage may lead to a loss of privacy	The lack of good sound insulation can reduce the privacy
Security risk	Using the item may lead to problems with the security of personal information and the loss of such information to hackers and other criminals	a wall system that is not strong enough will lead to the risk of security
Performance risk	The risk that the object would not function as intended	The risk of functional performance, such as good quality of construction
Financial risk	The usage of the object might result in monetary loss	An unreliable system can bring a financial risk for each of the stakeholders
Physical risk	The customer risks injury or other health problems by utilizing the object	The lack of healthy construction materials can lead to a physical risk
Ecological costs	The object harms the environment's well-being	An ecological impact on the environment because of a certain material usage
Societal costs	The item harms social progress. This could deal with problems like child labor, poor working conditions, etc.	For example, labor safety in the construction process of the partition wall system

Table 3: Negative value types, adapted from customer value types of Leroi-Werelds (2019)

2.1.3 Customer Value Index (CVI)

According to the foundational characteristics (FCs) of customer value, it is situation-specific (Leroi-Werelds, 2019), and given the complexity and depth of the construct, operationalizing customer value in its totality and defining a single standard scale to capture all of these variations may be difficult (Parasuraman, 1997). In 2019, the Customer value index (CVI) was proposed by Leroi-Werelds as a tool to measure customer value. According to Leroi-Werelds (2019, p. 663), "The CVI is a weighted composite of the relevant positive and negative value types related to a particular object." The proposition of a CVI aligns with the conceptualization of customer value. It considers the situational nature of the construct (i.e., FC5) by adapting the content of the index (i.e., the relevant value types) to the context under study. Also, it considers the multidimensional nature of customer value (FC6) by operationalizing customer value as a formative construct formed by the relevant positive and negative value types (Leroi-Werelds, 2019).

Leroi-Werelds (2019) suggested that according to the method of PLS-SEM, which is a guideline for measuring and modeling customer value, an exploratory qualitative study is advised by doing interviews with all potential customers to identify the relevant value types. For this aim, using the laddering technique is recommended (Leroi-Werelds et al., 2014; Woodruff & Gardial, 1996) until the potential customer mentions no new value type as the interviewee. Furthermore, it also recommends considering value types related to the value proposition of the object, especially when the object is new (like new technology), and recognition of the cost and benefit of it by the customer takes time. Consequently, in the guideline, after deciding on the object to study in the first step, in the second step, identify all the relevant customer values of the object by doing exploratory qualitative research, considering the value proposition of it, and then applying each identified customer value to the list of customer value types of CVI (Figure 1). This is a way of content validity of the CVI and ensuring that all the essential value types are included, and no customer value type is neglected before moving on to the final step, measurement model determination (Leroi-Werelds, 2019).

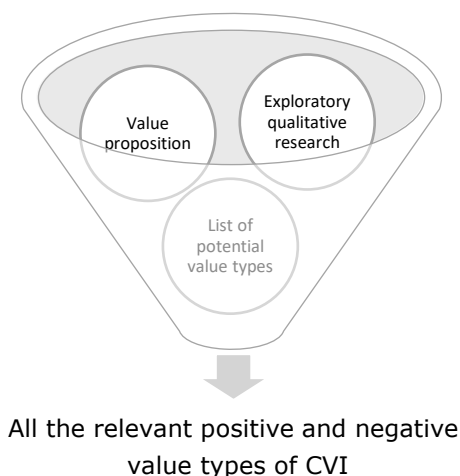


Figure 1: Step two of the guideline for measuring and modelling customer value (the PLS-SEM method)

2.2 Construction Industry

The construction industry is still not well-understood, and no common definition regarding its characteristics exists. Yet, its distinctive characteristics must be recognized to operate the construction sector successfully and efficiently (Ofori, 2015). According to Mokhtariani et al. (2017), although marketing management is the key to success in the construction industry market, many construction companies either do not understand marketing or do not care about it enough. This study mentioned that this is mainly because it is hard to use traditional marketing in the construction industry, and there is not enough research on the nature of marketing or marketing theories and strategies that are tailored to the construction industry. It is also reported by Smyth et al. (2018) that when it comes to the construction industry, marketing has been largely disregarded.

Additionally, Stremersch et al. (2022) focused on context-specific studies to explain their scientific value. They defined this kind of study as “a study in a unique setting, yielding conclusions that can be considered to have limited generalizability to other settings”. Considering Stremersch et al. (2022), the construction industry is unique, because it has its own characteristics and it is completely different from the other industries. To be more precise, this uniqueness comes from, firstly, the environmental factors such as the special regulations and trends. Secondly, the characteristics and the specific roles of stakeholders and actors in a construction process, as Kamara et al. (2000) highlighted, the complexity of this industry gets higher when the stakeholders in a construction project are more, and usually, the buyer of the material and the user are two different sectors. Third, the specific marketing mix of the industry is also a requirement to call the focused topic context-specific, which construction industry has its very specific elements. Considering both conditions, limited generalizability and uniqueness of context, we considered our study on partition wall systems as a part of construction industry as a context-specific study.

Compared to other studies, context-specific studies may have brought high “internal validity” since accuracy and precision may be higher in the context than across contexts, high importance for “stakeholders” in the context, and also “Innovation” that is being able to come up with new ideas that are appealing to a wide range of people, even if some empirical findings do not apply to all situations (Stremersch et al., 2022). Stremersch et al. (2022) collected a convenience sample of all articles employing field data published in 2019 and 2020 by four top marketing journals and realized that from all 164 papers which focused only on a single industry, just two, which is 1.2%, concentrated on the marketing in the construction industry.

Another issue with the construction industry is that the decision is made either by individuals or by organizations, and sometimes organizational factors influence decision-makers (Kometa & Olomolaiye, 1997). In addition, Kamara et al. (2000) mentioned that construction products are derived from other requirements, which shows that a created facility is not a goal but rather a means to meet the client's business requirements. According to Kamara et al. (2000), customer commissions and pays for a facility's design and construction. Client and user might be the same entity or distinct. As a buyer of construction services, the client should represent the interests of

users and other specified people, groups, or organizations who influence the procurement, use, operation, and destruction of the facility is commissioned. Mokhtariani et al. (2017) stated that the customer buys construction services, future users, and other interest groups. Therefore, depending on whether a product's users are consumers (i.e., individuals, families, and households) or industrial users (i.e., business organizations), various marketing concepts and principles apply.

2.2.1 Customer Value in Construction Industry

The enormous variety of building material alternatives makes material selection a complex and delicate undertaking. The architect frequently considers several variables when assessing the different types of building materials. As a result, these combinations of variables or factors frequently create trade-offs that add to the decision-making process's complexity (Ogunkah & Yang, 2012). In recent years, customer value as a trade-off between cost and benefit has become more prevalent in strategy and marketing literature, and it is regarded as critical to a company's competitive advantage and a key to long-term success (Salem Khalifa, 2004). However, Researchers rarely address methodologies or models for understanding, determining, or defining the underlying concept of customer value in construction, and not enough attention is given to this industry (Dlouhy et al., 2018). while Construction process could be improved by putting more attention on the needs of clients, the development of committed leadership, integrated processes and teams, a quality-driven agenda, and a commitment to people (Egan, 2009).

Although in this industry, different stakeholders have diverse perspectives on the value of a construction project, the idea of value has not been adequately researched in the context of project management (Haddadi et al., 2016). Nevertheless, some studies focus on customer value creation and customer value in the construction industry. Haddadi, Johansen, et al. (2017) did research to identify the difficulties and barriers to value creation in a construction project and then suggested the framework named "Best Value Approach (BVA)" to maximize value creation by considering guidelines and techniques from the beginning of the project for this aim. The framework helps determine what adds value for the user and owner in the project's operation phase and then makes use of this understanding in the design phase. They focused on these two stakeholders because achieving owners' and users' goals is essential for adding value to a project. It is also useful for the decision-makers to turn the objectives into workable solutions to create value in each project phase. They suggested that communication with the owner and providing a value menu by the decision makers as well as the collaboration of contractors in the design phase when the team is shaped early, can be helpful in the early stage of the project to enhance value creation.

Furthermore, Giménez et al. (2020) developed a value analysis model (VAM)(figure 2) based on the method of design science research (DSR) that is to measure customer value creation and value loss using indexes, considering the Kano model and target costing for construction project design by architects and engineers. DSR is used to investigate new options for problem-solving strategies and to construct or produce an artifact as a result (Holmström et al., 2009). The resulting VAM made it possible to measure and analyze value through desired, potential, and

generated value indices, value loss identification, and percentages of value fulfillment during the design stage (Giménez et al., 2020). The attribute classification of Kano lets the researchers determine the desired value and the potential value of the design's process, by-products, and products. Kano (1984) clearly distinguishes between different sorts of attributes, including must-be, one-dimensional, attractive, indifferent, and reverse.

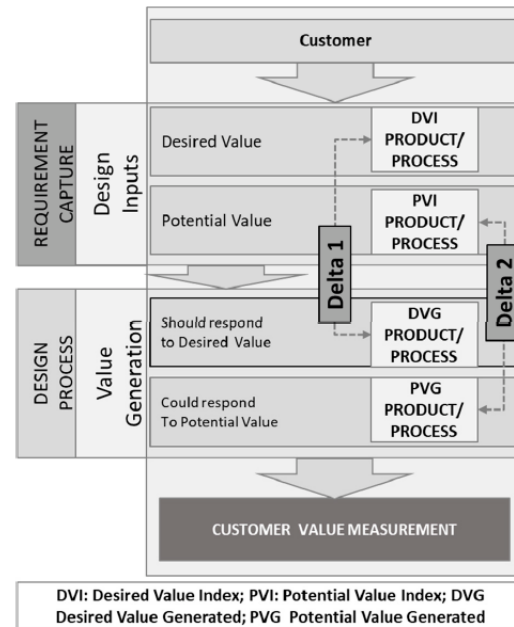


Figure 2: Value analysis model (VAM) developed by Giménez et al. (2020)

To explain the framework briefly, the early stage includes the customers' requirements which are the design inputs in the initial step of the design. In this phase, the desired value (DV) and the potential value (PV) show the customer's expectations regarding the product and design process. This initial step yields the desired value index (DVI) that shows what the customer expects, and the potential value index (PVI) is defined as what the consumer does not anticipate; it surpasses expectations regarding the process, product, or both. Next, the design process generates the desired value that should respond and the potential value that could respond. This second step yields generated value indices (GVI), which vary in desired value generated (DVG) and potential value generated (PVG) of the process, product, or both. Finally, DVI and PVI deltas are calculated. These comparisons measure design value compliance and losses. They also did two case studies to show how the calculation should be done, considering 24 attributes, such as aesthetic, durable materials or easy to build to three types of customers, including owners, designers, and customers that each of them was weighted based on their importance, for product and design process.

Dlouhy et al. (2018) emphasized that customer value is not a customer characteristic and is not the same as moral or personal values. Therefore, requirements, wants, ambitions, or expectations cannot be equated with customer value. Conforming to Dlouhy et al. (2018), it is important to consider that investigations about customer value in a construction project like a building must evaluate not only a physical product but also a process with the purpose of producing a product that is the building. However, the process-based model of Customer Value has not been studied much in the context of construction projects until now. Furthermore, it should be noted that both

business-to-consumer (B2C) and business-to-business (B2B) relationships are feasible in a construction project, and therefore, the model we use should be suitable for all these issues.

Dlouhy et al. (2018) focused on the Means-end models which Leroi-Werelds et al. (2014) stated that understanding the multidimensional ways to assess customer value is based on this theory. According to Dlouhy et al. (2018), the Means-end theory of Gutman's (1982) strives to establish a link between the attributes of a product or service (Means) and the customer's goals (Ends). As noted by Leroi-Werelds et al. (2014), there are three levels that show how products relate to customers in Means-end theory: 1-“attributes” which is the physical characteristics of a product, like its size, shape, or delivery time, 2-“consequences” which is related to personal experiences that come from using a product, and 3- “desired end-states,” which is explained as “centrally held and enduring beliefs about right and wrong, good and bad that cut across situations and products or services” (Woodruff 1997, p.141). Based on Leroi-Werelds et al. (2014), although some studies which considered the multidimensional approach to customer value focused on the attributes (Gale, 1994), the models of Woodruff and Gardial (1996) and Holbrook (1999b)(which was updated by Leroi-Werelds (2019)) considered the consequences of using a product. Instead of just focusing on product attributes, companies need to understand how and why customers like certain attributes and know what happens when people use their products (Overby et al., 2004). Therefore, Dlouhy et al. (2018) declared that Means-end models are sufficiently abstract to represent the intricate execution of building processes and they directly address the consequences of a product or process created during their usage, making it simpler and more adaptable to apply to the construction industry and therefore are the most suitable ones for this industry. “The means-ends models of customer value fill a gap in the literature by being able to explain why customers attach different weights to various benefits in evaluating alternative products/services.”(Salem Khalifa, 2004, p. 655)

Based on Dlouhy et al. (2018), customer value is the total of all the attributes and consequences the customer has evaluated to help accomplish their objectives and goals (Figure 3). Therefore, although value creation is equivalent to fulfilling customer requirements, we cannot consider the customer requirement equal to customer value.

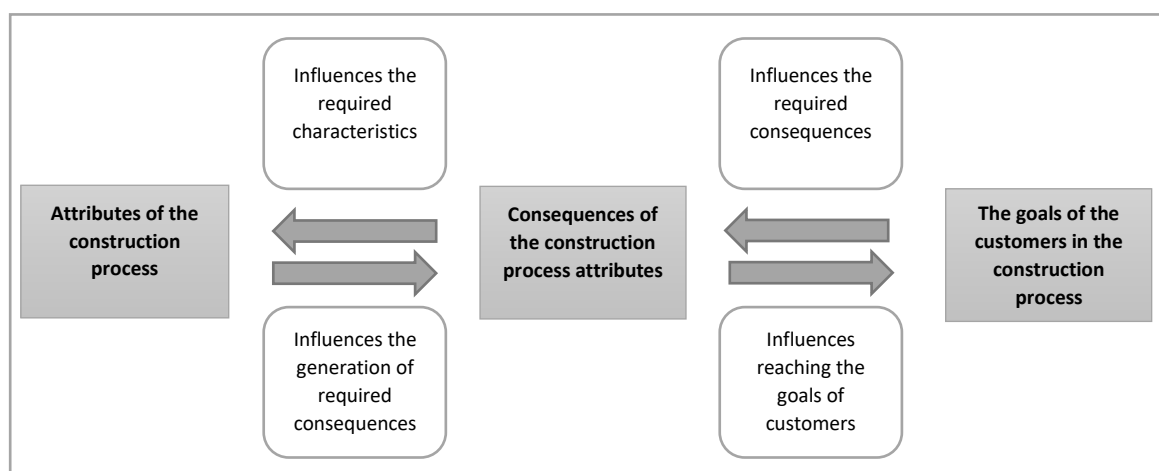
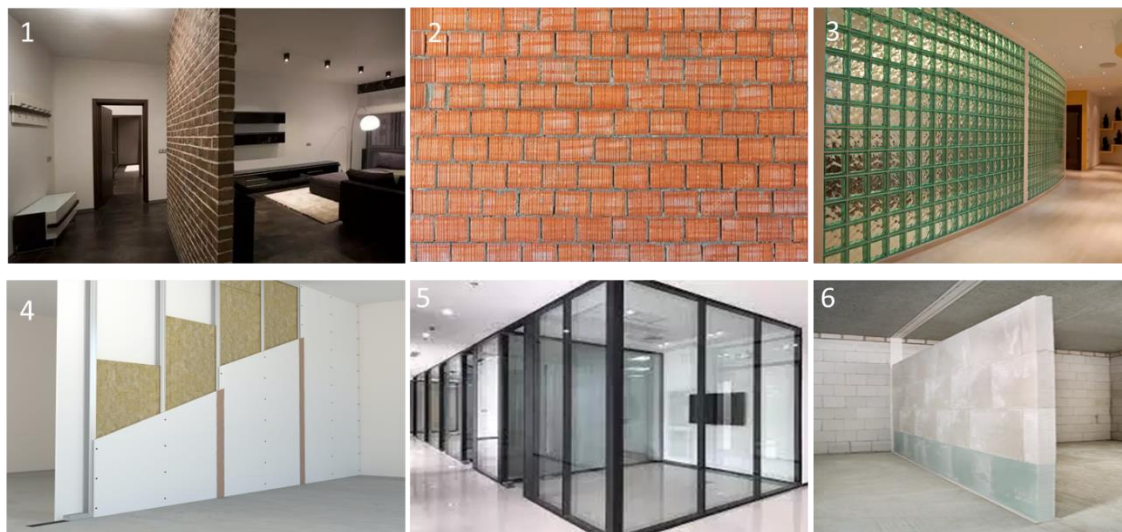


Figure 3: Adopting Means-model for the construction process (Dlouhy et al., 2018)

3. Research Methodology

3.1 Empirical setting

In this study, we will focus on the partition wall systems in construction projects. Partition walls are an important part of buildings and non-load bearing in general. They are interior walls that divide a building's space into rooms or different areas and define different rooms, improve comfort, health, and safety, and make better use of space (Broun & Menzies, 2011). Different types of partition walls have been used in construction in Europe, including lightweight concrete, gypsum blocks. (Lourenço et al., 2010). Recently, the building sector has seen obvious indicators for using lightweight partitions like drywall, which are more environmentally friendly and have more technical and economic advantages (Vasconcelos et al., 2013). To increase the performance of the partition walls, much research has been done to enhance current existing systems in the market with an innovative approach. Therefore, it is vital to understand which attributes and factors of partition walls have more value for the customers. Figure 4 shows several type of partition walls that are available in the market. Of course, there are more types of partition walls in the market available and even some types are the mixing different kind of the systems.



1. Brick Partition Wall
2. Hollow block and clay block partition
3. Glass block partitions
4. Plaster Slab Partitions (drywall systems)
5. Double Glazed Partitions
6. Gypsum block

Figure 4: some example of partition walls

Considering the literature review, we must highlight that a construction project is a process to create the final product, which could be the building or part of it, like a partition wall that we are focusing on. Therefore, from the start of the project in the design phase to the end of the project,

when the end-user starts using the product, there are different actors that each of them perceives as having varied value types as customers. According to Haddadi et al. (2016), different researchers have taken different approaches to value. Meanwhile, many theories and research streams have been used in various situations to understand "value," and the emphasis on users and consumers remains a constant theme. Haddadi, Hosseini, et al. (2017) stated that, according to the literature, value creation in a project is contingent upon the relative amount of value subjectively realized by a target user who is the value creation's focal point - whether an individual, organization, or society and also rarely do stakeholders in a project concur on what is valuable. Unique information, objectives, context, and circumstances that influence how the originality of the value is conceptualized and appraised might impact the perception of value. They mentioned that even different interests and perspectives on what is valuable might exist.

Nevertheless, the success of cooperation between actors and cooperation among all stakeholders contributes to the creation of value for all of them. These actors have different relationships with each other; some are B2B because they are companies, some are B2C because they are individuals, and even some have internal relationships with each other (like a subcontractor and a contractor). This is the reason that makes this industry more complex for researchers. Thus, to select the stakeholders for the interviews, we decided to interview the actors of two main phases of the projects, including design and construction, because they integrate the resources to provide value for the end-users. As we explained in Means-end models, the customer value is the consequence of the product attributes, which aim to reach customer values, purposes, and ends. This is especially important in the construction industry because many customer value types are not tangible for the end-users, or at least they will appear in the long run during the operation period.

3.2 Research design

3.2.1 Data collection

To explore rich data, nine in-depth semi-structured interviews were done with a minimum of 30 minutes of discussion. As discussed, we did interview all the relevant individuals to those phases who can give us insights based on their experience with partition wall systems in the design and construction phases, to explore all the appropriate value types. Thus, the interview guideline and questions were tailored based on those phases' actors. All the interviews were done online and in English and Persian (Farsi) and also were recorded and transcribed for further usage in data analysis. The Interviews, which were in Persian (Farsi), were translated and transcribed into English. We included diverse roles, profiles, backgrounds, ages, education, and gender, as they have different expectations and perceived value of the partition wall systems. For this aim, we consider a judgmental sampling technique to reach out to the people who can give us the most beneficial possible information. According to Kumar (2018), when a research question needs a specific sample that is hard to get through random sampling, judgmental sampling can help. In this method, which is a type of non-probability sampling, the subjects are chosen based on who is best suited or in the best situation to give the needed information (Sekaran & Bougie, 2016). Likewise, the interviewees were living and working in Belgium, except for one person who was

living in the Netherlands (Table 4). It should be noted that all the participants signed the contest form provided by Hasselt University, and they gave permission to us to process the investigated data in the context of this study.

Interview no.	Gender	Age	Country	Title
1	Female	32	Netherlands	Architect
2	Female	32	Belgium	Architect
3	Female	34	Belgium	Architect
4	Female	44	Belgium	Architect
5	Male	24	Belgium	Project Lead
6	Male	33	Belgium	Structural engineer
7	Male	31	Belgium	Architect
8	Male	32	Belgium	Project manager
9	Male	25	Belgium	Site Manager

Table 4: Summary of interviewees' profiles

It can be seen that more than half of the participants were architects, which mainly have the role in the design phase of the project, and the other ones are more related to the construction (implementation)

3.3 Laddering technique

Leroi-Werelds (2019), along with CVI and exploration of the customer value types, suggested using the laddering technique in the interview to the point no new value types were mentioned as (potential) customers by the interviewees. The laddering interview technique is based on the idea of the means-end concept and was created to give marketing managers a way to position items by connecting means (physical attributes of things) with ends (customer values) through advertising (Trocchia et al., 2007). Hinkle (1965) devised the method, which is based on Kelly (1955) personal construct theory, which posits that humans develop their own worldview by constructing a personal system of constructs or notions. The phrase "ladder" itself refers to a collection of personally significant elements spread across three related levels, arranged from top to bottom as follows: (a) attributes or characteristics; (b) consequences or benefits; and (c) values or beliefs (Trocchia et al., 2007). Since the meanings in a means-end chain are personally meaningful, the laddering technique has an advantage over other qualitative approaches in that it may produce results that are more directly tied to preference and decision behavior (Olson, 1988). In the interview, the questions starting with 'what' provide the attributes of the product or service (in this thesis, the partition wall systems), then the interview ask the follow-up question

starting with 'why', that lead to the consequences, which the interviewee mentions the point which provides the customer value types. The similar way is describing value proposition, in which it implies on the consequences of the feature embedded in the product or service, not the feature itself. As an example, the customer might answer the question ' what or which attribute of a particular partition wall systems is important to you?', if they mention the specific attribute like the weight of the system, in response of the question ' why it is important?' we get a lot of insight regarding it such as earthquake response and easy to transport, and by applying those consequences to CVI, we can suggest an outline for development of an scale at the end of the data collection.

3.4 Data analysis

To collect the data with the aim of understanding the values that the actors of construction projects had perceived from different types of partition wall systems, we tried to involve interviewees having experience with different types of partition walls. This could help us have a holistic view of values in order to develop the scale in the end. By following the questions in the interview guideline (Appendix 1), we started asking the attributes they consider important in the portion wall systems, followed by a question, "Why?". As well as the recognized value that we explore, we also considered the value proposition of the material and system providers if they are new technology and not perceived by the interviewees and then by applying each of the mentioned values under the customer value index (CVI) considering the updated typology introduced by Leroi-Werelds (2019). It is noted in the Leroi-Werelds (2019) article that if the customer value is the focal construct in the study and we do not want to measure each value type, we should use the aggregate customer value model that is the application of CVI in context of partition wall systems.

When conducting grounded theory research, open coding is a significant source of descriptions that needs to be handled and controlled. A grounded theory aims to create an emergent set of concepts and their relevant qualities that can be incorporated into a theory. (Glaser, 2016). Furthermore, According to Verleye (2019), most authors cite relevant literature on essential ideas in the case study introduction without illustrating a conceptual model due to a lack of theory and empirical evidence. These studies usually use open or in vivo coding for data analysis, preceded by reviewing the data and/or creating case narratives or histories.

We used the software called MAXQDA (Release 22.5.0) to analyze the data. It helped us do the analysis faster and with higher accuracy. As the data analysis steps are shown in Figure 5, first, we read all the cleaned collected data line by line. Each relevant text (Illustrative evidence or quotes) was coded, and we derived the first order of concept: In-vivo codes (open codes). In the next step, all the relevant 1st-order codes were put together, and we added them to the themes group as the 2nd order, which according to (Leroi-Werelds, 2019), are customer values. Next, each themes group was applied to the different positive and negative value types of customer value typology of Leroi-Werelds (2019), called group themes or aggregate dimensions.

Ultimately, we will have specific aggregate dimensions of customer value types in the 3rd order of group themes. We will also develop a single scale for the considered phases in the construction process of partition wall systems.

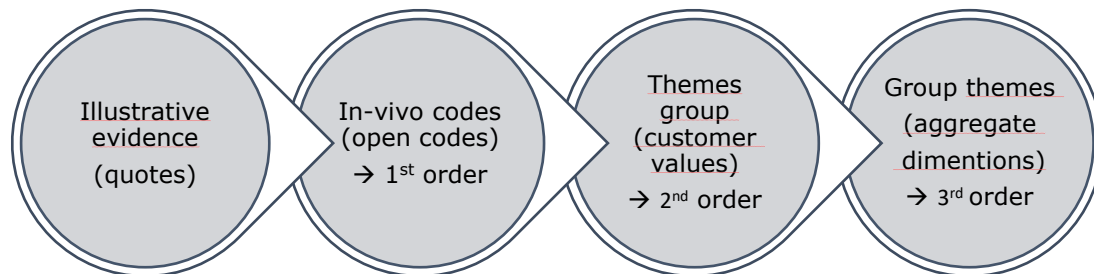


Figure 5: The four steps of the data analysis process

4. Results

4.1 Coding the collected data

After cleaning all the received data, we began the coding process and followed the steps outlined in the data analysis section. The following table illustrates how we extracted open codes from the transcribed data and grouped them by theme. Table 4 displays 62 In-vivo (open codes) in the 1st-order and 33 themes in the 2nd -order. Each code is extracted from Illustrative evidence that comes from the interviews. In the second order, which represents the investigated customer values, we deemed the 1st-orders which have more similar concepts, to belong to the same categories.

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
"That is maybe also a big advantage of specific systems. It goes faster in execution. Because we don't have to count on the drying period, and we can move very fast." (Respondent 4)	Faster in execution	Speed of installation
"That's going fast. [...]. And the guys are making us 60 square meters a day, and you have a big bag like we had this; it was almost 300 square meters. In one week, the guys were finished." (Respondent 5)	Going fast	
"We expect partition wall systems to perform well regarding fire resistance; if it is not performed as much as we expected, there would be some risks and even danger." (Respondent 2)	Perform well regarding fire resistance	Fire resistance
"Fire resistance should also be considered as it can bring more safety to the building." (Respondent 8)	Fire resistance safety	
"I always check the sound insulation of the wall systems. Especially in the residential buildings, we have a problem with this issue. Because the sound goes to the other apartment easily, this should be considered." (Respondent 1)	The sound goes to the other apartment	Sound Insulation
"If the sound insulation is better, the spaces would have higher privacy. But it could be different in offices, restaurants, etc." (Respondent 6)	Higher privacy with sound insulation	
"For the sound insulation, when it comes to the banks the privacy is very imperative and we take them into account as a result of a good sound insulation and acoustic that prohibit the ruction. So, both of them are important but hum more in the schools." (Respondent 3)	Privacy and hum reduction	
"Some partitions are more flexible to change over time, as we need them, especially in commercial projects or later renovations." (Respondent 8)	Flexible to change	Flexibility

Illustrative evidence	In-vivo codes (open codes) → 1 st order	Themes group → 2 nd order
"Another example is if they want to build a university, there is a high probability that they want to change the spaces over time. Consider an office with ten employees and they want separate space for them, but the building is sold, and a new company has 20 more employees. So, they want to change the design. They need more space and want to move the walls. This is an example of how flexibility has importance." (Respondent 1)	Change the spaces	
"When we decide which material could be the best option, many companies send a sample of the material, and we can evaluate it better. Of course, our experience with the previous project in that we physically saw the material could be a very good opportunity for us in the decision-making process, and it is more tangible for us." (Respondent 3)	Tangible sample	
"The relationship with the company which provides the material and marketing, visiting the company's factory and production line is good, and how they present their material, providing a good package, or the catalogs are important. Some companies are working on some software or providing some support for the architect on software like Revit or Sketchup is useful." (Respondent 3)	Available information on the material	Enough information
"Energy is very important, and we try to consider thermal insulation [...]. A good material prevents thermal transfer." (Respondent 3)	Thermal transfer	
"Thermal isolation, [...], we need to consider this for the buildings when it comes to the material selection." (Respondent 2)	Thermal isolation	Thermal performance

Illustrative evidence	In-vivo codes (open codes) → 1 st order	Themes group → 2 nd order
<i>"Some producers provide more support for the project while the system is implemented. Sometimes, they provide some seminars and technical support for the projects."</i> (Respondent 8)	<i>Seminars & technical support</i>	
<i>"It is always important to get support from the producers. [...]. Many innovative materials needed to be implemented especially, so they should come to the site and explain it. They sometimes send you to some projects to see if those systems have done other projects."</i> (Respondent 1)	<i>Support for the innovative products</i>	
<i>"The producer's support is very important. Typically, they support very well. If you follow up with them, you get good responses. Recently we have seen that even the plans are modelled on a BIM, and using virtual reality, you can see the detail of the projects step by step, and it can increase the precision."</i> (Respondent 6)	<i>Digital support</i>	Technical support
<i>"Sometimes we invite them to the projects and ask if what we have in mind to build is compatible with their produced material and systems and if they can give us solutions. So, I would say if we can personalize that type of material and adapt it to the projects, especially in the big projects can help a lot. The result of this relationship will lead to a good design, so the used material would be completely based on the design's needs."</i> (Respondent 2)	<i>Presence in the project</i>	
<i>"When materials come from outside the country or region, they have some installation difficulties as the skilled workers for those systems are unavailable. When skilled installers are not available, the risk that it does not have a good performance will increase."</i> (Respondent 1)	<i>Skilled installers</i>	Skilled worker availability

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
"Sometimes the contractors do not have good experience [...]. Some of the installers cannot speak the local language [...]. Moreover, some of them might not have enough technical knowledge." (Respondent 6)	Skilled worker knowledge	Ease of installation
"Especially the prefabricated partition walls are easier to install." (Respondent 3)	easier to install	
"I can say the project's effort is more important than sustainability because, in the end, we need to choose the implementation phase of the project as well to see if it is easy to install. It is very important. If it is easier to install, that can make the construction speedier." (Respondent 3)	Project's effort	
"If the material is easier to install, even with a worker can be done, but if the elements are bigger, we need more machinery, and more difficult to cut." (Respondent 8)	Less resources needed	Energy efficiency
"One of the most important factors that lately has become more important is energy, that we could as much as possible make the building isolated and better performance for this issue." (Respondent 1)	Performance in energy	
"The quality is very important indeed." (Respondent 3)	Quality	Quality of material
"I think the quality of partition walls to a minor aspect of the aesthetic, [...], and next to that would be durability, which is the most important." (Respondent 7)	Quality of partition walls	
"[...], But sometimes they are more expensive than the other ones. Therefore, their price is important, as it can affect the project's total cost." (Respondent 8)	Cost	Costs

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
"[...] we try to push everyone in the team, not only our team but all of design and the construction team, to find places where we can make it the most economical without sacrificing quality, of course." (Respondent 7)	<i>Economical</i>	Compatibility
"Price is also very important. It comes either from the owner, or we can relate it to the scale of the project (small, big, etc.)" (Respondent 2)	<i>Price</i>	
"All the technical stuff, electricity, water, ventilation, everything, it's much easier and faster to integrate [...], they're also empty, and you have a space inside, and you can put some of the electricity and other stuff that you need." (Respondent 4)	<i>Easier and faster to integrate</i>	
"You can just prepare in the ceiling or on the floor some pipes or some electrical wiring, and after that, you can easily move it inside of the wall, so it's just much more flexible [...]." (Respondent 9)	<i>Move the installation inside the wall</i>	Seismic performance
"The wall has to have a good performance in earthquakes. Yes, maybe it is more important in some countries and less in others. But generally, it is important to consider. This could be the consequence of the lightweight wall systems." (Respondent 1)	<i>Good performance in earthquakes.</i>	
"When the walls are lighter, the dead load on the building will decrease. As I said, it affects earthquake performance, but it will affect the financial issues and make the total price of the building less, affecting other elements in a construction building." (Respondent 1)	<i>Earthquake performance</i>	

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
<i>"But because of the increase in the demand for a special type of system, we must choose a system that is available in the time we need to buy it because some companies are not able to provide the material. Sometimes the projects last 3-4 years for all the phases and tendering. When it comes to implementation, the material that the architect prefers is not available in the market, and the project will face issues." (Respondent 8)</i>	<i>Providing the needed material</i>	Availability of material
<i>"In schools, for example, it is important that the material is bio because of the health of the kids as well as acoustic. Because of the health of the children as much as we can, we do not choose systems which is included plastics, and we prefer natural materials that come from there, like wood, gypsum, etc." (Respondent 3)</i>	<i>Bio and natural material</i>	Healthy material
<i>"Sometimes in the projects, we see that the architects are willing to change some elements on the walls and make them more beautiful because the aesthetic is important to them." (Respondent 6)</i>	<i>Beautiful material</i>	Beauty
<i>"According to the type of building usage and design, the aesthetic is considered for the material used in the type of partition wall systems selection." (Respondent 2)</i>	<i>Aesthetic of material</i>	
<i>"If the material is poisonous, like asbestos, when you want to demolish it in the future, there would be an environmental and financial risk as well because you have to consider a lot of issues for that process." (Respondent 3)</i>	<i>Environmental risk</i>	Environmental effect

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
"The recycling process and production process, the energy they need to be produced, and the general effect on the environment are considered." (Respondent 8)	effect on the environment	
"The more the material has more standards, the better." (Respondent 8)	Standard of the material	
"The risk even could be not getting approval from the related organization, which checks the standards that is obligatory for the building." (Respondent 2)	Obligatory standards	Standards
"Time also could be a cost for the project, so the owner considers a time frame that the designed detail should be constructed. [...]. If the system has a simpler detail like prefabricated partition walls, it could be don faster and made in the considered time." (Respondent 2)	Time frame	Installation time
"[...], it's much easier and faster [...], because there will have to use a lot of machinery and it's dusty and dirty and more difficult." (Respondent 5)	Dust and dirt	Clean installation
"Some of the material has bigger modules which makes it difficult for logistics. [...]. We also need some special machines and equipment to move the material in the project size." (Respondent 8)	Difficult for logistics	
"[...], transportation and implementation are also easier. You might have seen them on the street when they want to transfer some material to the site and how difficult it is. They have to bring some special machines and use some equipment." (Respondent 1)	Transfer some material to the site	Ease of transportation
"Recyclable materials are more demanding because we need to separate the material from recycling, and there might be harm to the environment. If a	Recyclable materials	Recyclability

Illustrative evidence	In-vivo codes (open codes) → 1 st order	Themes group → 2 nd order
<i>building is constructed today in the future, we need to demolish it after its life cycle. But sustainability awareness will also increase constantly, becoming more important. So, we need to predict this from now and consider this issue.”</i> (Respondent 3)		
<i>“[...] It means it is possible to work for a long time, and also we see how recycling it is. If it is not recyclable and harms the environment, we avoid using it.”</i> (Respondent 1)	<i>Recycling the material</i>	
<i>“Sometimes you want to have an attachment to the walls. We should see what load the wall can bear. Or when we want to attach the door to the wall, I should see if the wall is a good choice. If there is not a good match between our choice and the performance that it can provide, the risk will increase.”</i> (Respondent 1)	<i>Load the wall can bear</i>	Load-bearing capacity
<i>“[...], you can put very heavy cupboard or whatever you want to hang. It's always possible.”</i> (Respondent 2)	<i>Hanging stuff</i>	
<i>“[...], we need to make the most optimum choice. We cannot go for different types of walls because if they are completely different, we will face problems in installation. Because we cannot have different systems for each space like living rooms, bathrooms, kitchen, etc., we have some groups of installers, and if we go for diverse systems, we must bring many different groups, which doesn't make sense.”</i> (Respondent 1)	<i>Different systems for each space</i>	Versatility
<i>“We consider some different details; for example, sometimes, we need to have wider walls to have some pipes or installation inside.”</i> (Respondent 1)	<i>Different details</i>	

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
<i>"Even it is important that we can clean them as well as repairing or replacing. This is the final appearance of the building, and it is the beauty of the building, both interior and exterior walls."</i> (Respondent 1)	<i>Cleaning the wall</i>	Cleanability
<i>"Imagine they want to change a part of the space or repair it; they should have this option just to change that part more easily, not to change the whole."</i> (Respondent 1)	<i>Repairing the wall</i>	Maintainability
<i>"So repairment capability, especially in public buildings such as universities, hospitals and libraries, is very important because they are bigger and used more than private buildings."</i> (Respondent 1)	<i>Repairment capability</i>	
<i>"Even it is important that we can clean them as well as repairing or replacing. This is the final appearance of the building, and it is the beauty of the building, both interior and exterior walls."</i> (Respondent 1)	<i>Repairing or replacing</i>	
<i>We need to see if the partition wall has enough strength and is durable enough that we use it in the long term.</i> (Respondent 1)	<i>Durable enough</i>	Durability
<i>"So when a renovation, we always try to reuse as much as possible because of the building costs for clients."</i> (Respondent 4)	<i>Reuse the material in the renovation</i>	Reusable material
<i>"We need to see how the life cycle of the material has been defined and, even if the building is supposed to be demolished in the future, if those materials are possible to be used or not."</i> (Respondent 2)	<i>Possibility to use again</i>	
<i>"Some types of partition walls are more efficient with humidity because we need to use them in spaces that need to be water-resistant."</i> (Respondent 8)	<i>Efficient with humidity</i>	Moisture resistance

Illustrative evidence	In-vivo codes (open codes) → 1st order	Themes group → 2nd order
<i>"It is important to determine how many people need to work and which amount of equipment is needed to install the systems and how long it takes, especially for the companies like us that have different projects and need our resources."</i> (Respondent 8)	<i>Need of resource</i>	Resources need
<i>"[...] that's when you have a little bit of space. For example, when you're in Antwerp or the city center, there's not much space, that can be really interesting because you don't need a lot of space."</i> (Respondent 5)	<i>Need for space to storage</i>	Less space for storage
<i>"I believe that the change in the technology and new materials in the market can take more time to be accepted by the different stakeholders like the owner, designer (architect), etc. Trust can be created over a long time following the usage experience. So it takes time, but it will eventually be accepted. For example, a 3d printer that is new but has yet to be used, of course, in the future, will grow more and get more popular."</i> (Respondent 2)	<i>Usage experience</i>	Trustworthiness
<i>"The risk even could be not getting approval from the related organization, which checks the standards that is obligatory for the building."</i> (Respondent 2)	<i>Required standards</i>	

Table 5: the 1st and 2nd order extracted from the illustrative evidence

4.2 Application of CVI on customer value

Based on Table 5, we derived 33 themes groups (second order). Next, we compared each of these values to the CVI. This application generates aggregate customer value dimensions based on the CVI (Leroi-Werelds, 2019). Some of the examined value types can be considered for more than one value type of the CVI typology based on the explanations we can consider. CVI categorizes customer value types as either positive or negative. As previously indicated, this classification is based on the trade-off between cost and benefit. Therefore, in this section, we begin assigning all customer values (2nd order) to positive value types, followed by negative value types. In addition, we provided a concise description of the investigated customer value by combining the CVI definition of customer value categories with the object of interest, namely partition wall systems.

4.2.1 Positive value types

4.2.1.1 Convenience

Leroi-Werelds (2019, p.661) describes convenience (efficiency) as “The (perceived) extent to which the object makes the life of the customer easier”. In this study, we have different types of actors, and these value types could be important to the ones involved in the implementation process to have a smoother installation and the end-user whose life is affected. Therefore, according to the interviewees, one of the most critical customer value types based on is convenience. Seven values fall into this value type as follows (Table 6):

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Sound Insulation	It makes the customer's life easier and more efficient by reducing the amount of noise they have to deal with, making them feel more comfortable overall.	Convenience
Ease of installation	It concerns how much the partition wall is thought to make the customer's life easier. Simple and straightforward installation procedures can save consumers time and effort in construction process, increasing their overall satisfaction with the product.	
Availability of material	It has to do with how simple it is for the customer to get the necessary products. If the material is readily available, the customer will not have to spend much time trying to locate a source and will not have any trouble getting the material for the construction process and will have a smooth material supply.	
Clean installation	When referring to installation, cleanliness might be the amount of dust, debris, or other undesired materials produced during installation. It may pollute the site or harm the inhabitants' health. The customer's life will be easier if there is less dirt during and after installation.	
Ease of transportation	It makes the customer's life easier because they don't have to use complicated machines and tools to move materials around on a construction site.	
Maintainability	The ease with which a partition wall can be repaired and maintained over time is its maintainability. This may involve factors like the ease of accessing components for maintenance or replacement, the accessibility of spare parts, and the degree of expertise needed for maintenance operations.	
Versatility	It makes it easy for the partition wall to fit different spaces and needs, making it a convenient and effective partitioning method.	
Less space for storage	The material that needs less storage space makes this easier in the construction process because many pieces of equipment and material need to be stored there.	

Table 6: the relevant value types to "Convenience(efficiency)"

4.2.1.2 Excellence

Excellence is about the quality that the customer perceives and can be related to the product, service, or a combination of both, depending on the context. Some examples of excellence include reliability, empathy, responsiveness, and interactional quality, which all fall into this customer value type category (Leroi-Werelds, 2019).

Almost half of the participants considered thermal insulation an essential factor in the partition wall systems selection process. Thermal insulation is even more critical when we talk about exterior walls. Yet, in this study, we realized that it could also be significant in interior walls. This is the opposite of what Broun and Menzies (2011) mentioned: thermal insulation (heat transfer through partition walls) is not required to design and construct these wall types.

We considered thermal insulation in the category of “Excellence”, while it can also be considered in the customer value type “performance risk” if it does not perform well. The following quote makes it more clear with an example:

“Thermal isolation, both humidity and thermal, are important. [...]. Based on the type of usage of the building, it can be different, more or less important. Sometimes, we have a commercial project with some restaurants with some rooms as fridges, so we need to consider partition wall systems with these criteria to prevent the temperature transfer between the spaces”.

In total, seven explored value types were considered in the category of the customer value type “Excellence” (Table 7).

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Enough information	It is related to the available information and the technical data of the partition wall systems for usage in the design and implementation phases	
Thermal performance	It has to do with how well the product serves its intended purpose, which in this case is thermal insulation, and is a measure of the product's quality. The perception of excellence and quality is higher when a product has better thermal performance.	
Skilled worker availability	The availability of skilled workers who are knowledgeable about the specific type of partition wall being installed can enhance the quality of the service.	
Quality of material	The quality of the materials used to make the partition wall can affect how long it lasts, how reliable it is, and how well it works, which can affect how happy the customer is. If the materials are of high quality, the partition wall is more likely to meet or exceed the customer's expectations, improving the customer's experience.	
Load-bearing capacity	The partition wall's ability to hold weight can be seen as a measure of how reliable it is and how well it can do what it was made to do.	
Maintainability	The ease with which a partition wall can be repaired and maintained over time is its maintainability. This may involve factors like the ease of accessing components for maintenance or replacement, the accessibility of spare parts, and the degree of expertise needed for maintenance operations.	
Durability	It is about how good the product or service is. Durability is important to many customers because they want to know that the product they buy will last a long time and won't need to be fixed or replaced often.	

Excellence

Table 7: the relevant value types to "Excellence"

4.2.1.3 Aesthetics

"Aesthetics is appealing. This involves the attraction of the object's design and atmospheric aspects such as layout, color, etc." (Leroi-Werelds, 2019, p.661) . We found two values that can be considered under the customer value type "Aesthetics" (table 8). The design and beauty of the partition wall systems related to the used material are essential to the architects and end-user. Moreover, the value of cleanability is important during the operation and usability. This is why the partition wall needs to be cleaned periodically to have the desired beauty for the end user.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Beauty	The beauty and appearance of the final partition can be related to the design and the material shape, color, etc.	Aesthetics
Cleanability	It is connected to aesthetics since clients could regard a clean, well-kept partition wall to be more appealing	

Table 8: the relevant value types to "Aesthetics"

4.2.1.4 Control

We considered two explored value types in the customer value type of "control" (Table 9). When discussing this value type, we consider the customer's ability to control the partition wall system as the object. Most interviewees mentioned that "flexibility" is one of the most important customer values and with regard to "Compatibility", some interviewees mentioned it is a significant advantage for a partition wall to be compatible with different spaces of the buildings, especially when some installations should be considered inside the wall.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Flexibility	it allows the customer to have more control over the outcome of the service delivery process, specifically in terms of being able to customize the size of the room according to their needs.	Control
Compatibility	It is related to the ability to customize the inside of the wall can give the customer more control over the final product.	

Table 9: the relevant value types to "Control"

4.2.1.5 Relational benefits

One of the most important values for the interviewees was "relational benefits", which is defined as a proper relationship between the customer and the product. Technical support is considered a value that falls into that customer value type (Table 10) and almost half of the interviewees directly mentioned the need for support, especially technically, from the producer of the partition wall system.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Technical support	It contributes to improving the customer's relationship with the service provider and can help establish the customer's trust and confidence in the provider.	Relational benefits

Table 10: the relevant value types to "Relational benefits"

4.2.1.6 Ecological benefits

The ethical value of ecological benefits is determined by their contribution to environmental health and well-being as a whole. We derived four values from the interviews that are considered to be in the category of the customer value of "Ecological benefits (ethics)" (Table 11).

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Energy efficiency	Energy-efficient partition walls can reduce energy consumption and greenhouse gas emissions, thereby contributing to a more sustainable environment.	Ecological benefits
Environmental effect	By minimizing negative environmental impacts such as pollution and depletion of natural resources, partition walls made from eco-friendly materials can provide ecological benefits to customers.	
Recyclability	It permits materials to be reused rather than discarded as refuse, thereby reducing the negative impact on the environment.	
Reusable material	It positively impacts environmental well-being by reducing waste and resource consumption, promoting sustainable practices, and reducing the need for resource extraction and production, respectively.	

Table 11: the relevant value types to "Ecological benefits (ethics)"

4.2.2 Negative value types

As previously stated (Leroi-Werelds, 2019), customer value typology views customer value as a trade-off between benefits and costs. We will review the customer values we looked into in the interview parts below.

4.2.2.1 Price

During the semi-structured interviews, some participants considered an imperative role in the partition walls' price and cost (Table 12). It is important because the project's total cost can be affected if the partition wall material, installers' wages, and other costs are high.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Cost	It is related to the cost of the material and construction of the partition walls in the projects	Price

Table 12: the relevant value types to "Price"

4.2.2.2 Time

Time is defined as a customer value type of an object which needs time to be prepared (Table 13). In construction projects, time is an important factor that should be considered, and some participants in the interview mentioned how the speed of the construction and installation time are considered. It shows that time is an essential issue for the end-users to move faster to the building in the design and implementation phase, and time has a key role for the actors.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Speed of installation	It is related to how fast the partition wall system is constructed and influences the timing of the project	Time
Installation time	It refers to the amount of time that the partition wall system requires to complete the installation	

Table 13: the relevant value types to "Time"

4.2.2.3 Effort

The customer value type, "Effort" refers to the amount of effort needed for the object to be used for the customer. In this research, we found two relevant value types, that ease of installation is already mentioned in "convenience". But if the partition wall is challenging to construct and needs much effort based on the level of difficulty, it could be relevant to a negative value type of "Effort" (Table 14). In fact, the resource needed is crucial to choose the partition wall systems, especially if the company is working on different projects and they need to allocate its resources efficiently.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Resources need	This can include the number of installers and equipment required to complete the installation.	Effort
Ease of installation	It implies that if the installation procedure is complicated, resource-intensive, or physically demanding, it can negatively affect the customer's perception of the product.	
Ease of transportation	As transportation and moving of the needed material and equipment become more problematic, more effort, energy, and resources may be required.	

Table 14: the relevant value types to "Effort"

4.2.2.4 Performance risk

If the object does not perform in the expected and intended way, its performance has some risks. We explored value types that the interviewees had a concern regarding their performance. The sound insulation is repeated here, as mentioned in the convenience, but it can also be considered in the value type "Performance risk" (Table 15).

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Fire resistance	The partition walls may not perform properly in a fire situation, and there would be a risk	Performance risk
Sound Insulation	The risk that the partition wall does not perform well in the context of sound insulation	
Seismic performance	Customers can anticipate that a wall will function as designed during an earthquake without collapsing or causing damage to the surrounding structure. Customers can expect a wall to function as designed during an earthquake without collapsing or causing damage to the surrounding structure.	
Humidity performance	Inadequate humidity performance poses a risk, as it can result in damage, malfunction, and other negative outcomes.	

Table 15: the relevant value types to "Performance risk"

4.2.2.5 Physical risk

Physical risk can be a concern for the customers as it could cause health problems or injuries. We discovered that healthy material that can avoid that cause is important (Table 16). A few times it was mentioned that there is a concern regarding the material, which causes some physical risk for the customers, especially the end-users. More specifically, it was noted that this is more important in the school because the kids are more sensitive groups regarding this risk.

Themes group → 2nd order	Description by the author in the context of partition wall systems	Group themes → (3rd order) Customer value types (CVI)
Healthy material	Healthy materials used in the partition walls are important to consider for the well-being of building occupants.	Physical risk

Table 16: the relevant value types to "Physical risk"

4.2.3 Proposed new customer value type

4.2.3.1 Trustworthiness

After an extensive review of the various customer value types, we have included "Trustworthiness" as a new value type, comprising a range of customer values (as indicated in Table 17). Standards play a crucial role in the construction industry, and as noted by Taylor (2000), clients or designers may establish performance levels based on these standards. Similarly, local authorities or government bodies may enforce a particular level of performance based on the standard, particularly when health and safety are at risk. When materials and systems conform to various standards (both mandatory and non-mandatory) and receive the relevant certifications, customers tend to have more confidence in the product. Consequently, companies that seek to introduce new materials or systems, or improve existing ones, strive to obtain these certifications to install confidence in their customers. As mentioned in some interviews, customers tend to trust materials more when they have passed several standards and when the producers provide relevant documents. For instance, when an architect specifies a certain level of fire protection for a building, customers value receiving a certificate demonstrating the partition wall system's performance. One of the interviewees stated that:

"For example, we expect partition wall systems to have a good performance regarding fire resistance, and if it is not performed as much as we expected, there would be some risks and even danger. The risk even could be not getting approval from the related organization, which

checks the standards that is obligatory for the building. So, if it cannot perform perfectly, in the end, it could have a physical and financial risk for the end-users. This is why we consider the standards of the material one of the important elements and make it more reliable."

Upon reviewing the aforementioned quote, it is essential to note that while the "Trustworthiness" value type was obtained from interviews with select individuals, the construction industry's Customer Value Index (CVI) encompasses various customer value types and value propositions. In order to facilitate customer decision-making, many companies that manufacture partition wall systems seek certification from institutes to demonstrate the reliability and safety of their products.

Positive experiences from personal usage or feedback from other users can also contribute to the value of Trustworthiness. For example, suppose a customer uses a particular brand of construction material and finds it reliable and durable over time. In that case, they are likely to view that brand as trustworthy. Similarly, customers who hear positive feedback from other users about a particular material or system are more likely to trust that product. The producers can gain this by facilitating the customer to share their experiences. As one of the interviewees mentioned, if there is more experience using the systems, trust will be created:

"I believe that the change in the technology and new materials in the market can take more time to be accepted by the different stakeholders like the owner, designer (architect), etc. Trust can be created in a long time following the usage experience of that. So it takes time, but it will eventually be accepted. For example, a 3d printer that is new but has yet to be used, of course, in the future will grow more and get more popular".

Themes group → 2 nd order	Description by the author in the context of partition wall systems	Group themes → (3 rd order) Customer value types (CVI)
Usage experience	Initially, stakeholders may be skeptical of new materials or technology in construction. However, with proven reliability, they gradually gain trust. Positive experiences and feedback from other users, such as references to partition wall systems, can also contribute to building trust.	Trustworthiness
Required standards	These standards are usually set by groups like government agencies or industry associations to ensure the materials meet safety and quality requirements. In other words, the standards help ensure that the partition walls perform as intended and provide occupants with a safe, comfortable, and efficient environment.	

Table 17: the relevant value types to "Trustworthiness"

4.3 Discussion of findings

We investigated 33 potential applicable value types using consumer interviews and exploratory research, as was covered in the preceding section. We allocated 37 customer values in total, some of which were given different descriptions for various customer value types (Sound Insulation, Maintainability, Ease of installation, and Ease of transportation). Based on the CVI, we discovered six positive value types (containing 26 customer values) and five negative value types (including 11 customer values). In this study, we evaluated the seventh value type, "Trustworthiness" in addition to Leroi-Werelds' (2019) customer value typology. As expected, not all of the CVI's customer value categories applied to partition walls, but we attempted to investigate all the value types of customers evaluated. The following figure (Figure 6) is the aggregate dimensions of the explored customer values and, to be able to catch a holistic and detailed view, managers should go one step back and consider the sub-types of the value types, which we defined them under "Themes group" that was the 2nd order of coding process as well. In fact, that group of the order was the customer value, and we categorized them under each customer value type of CVI.

In terms of positive value types, the value types "Convenience" and "Excellence" comprised the most researched customer values extracted from the interviews, with eight and seven values, respectively, followed by "Ecological benefits" for various customer values. "Aesthetic" and "Control" both had two different consumer values, one of which was tied to the "Relational benefit." Furthermore, four different customer values were classified as "Performance risk," three as "Effort," and two as "Time" in terms of negative customer value types. Similarly, "Physical risk" and "Price" each included one customer value.

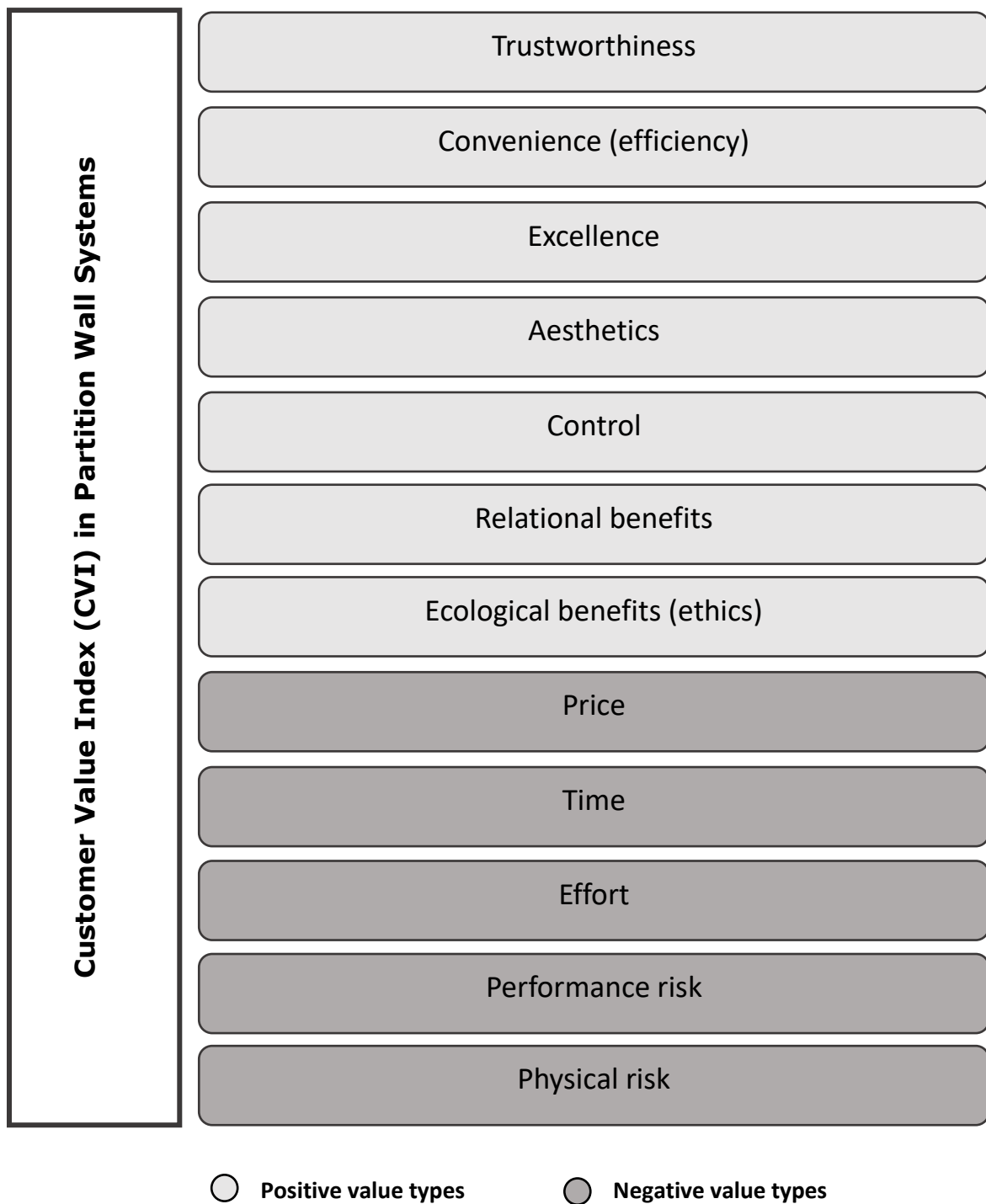


Figure 6: Aggregate Dimensions - Relevant Value Types in Partition Wall Systems (CVI)

4.4 Proposed outline for the scale development

In this study, we aimed to provide a framework for scale development in the final stage so that managers and future researchers can use it for further analysis of customer value in the construction industry, focusing on partition walls. Kock et al. (2019) argue that the development and use of measuring instruments (or "scales") that endeavor to quantify constructs is crucial for future social science and marketing research and knowledge advancement. As a result, we created an outline for scale development with positive and negative customer value types by combining the customer value conceptions of the second order of coding with the applicable customer value index (CVI) (Table 18).

Proposed CV measurement scale in partition wall systems			
Positive Value Type	Measured Concept	Negative Value Type	Measured Concept
Convenience	Sound Insulation	Price	Cost
	Ease of installation	Time	Speed of installation
	Availability of material		Installation time
	Clean installation	Effort	Resources need
	Ease of transportation		Ease of installation
	Maintainability		Ease of transportation
	Versatility	Performance risk	Fire resistance
	Less space for storage		Sound Insulation
Excellence	Enough information		Seismic performance
	Thermal performance	Physical risk	Humidity performance
	Skilled worker availability		Healthy material
	Quality of material		
	Load-bearing capacity		
	Maintainability		
	Durability		
Aesthetics	Beauty		
	Cleanability		
Control	Flexibility		
	Compatibility		
Relational benefits	Technical support		
Ecological benefits (ethics)	Energy efficiency		
	Environmental effect		
	Recyclability		
	Reusable material		
Trustworthiness	Usage experience		
	Required standards		

Table 18: Proposed outline for CV measurement scale development in partition wall systems

5. Conclusion

5.1 Theoretical contribution

In this section, we will discuss the findings that contribute to the existing theory by emphasizing the significance of customer value in construction industry.

Firstly, we considered the typology of Customer Value Index (CVI), introduced by Leroi-Werelds (2019), which was an update on Holbrook (1994) customer value typology. Through interviews, we explored 37 customer values and classified them in the customer value types of CVI. Therefore, we validated 11 relevant CVI value types, including six positive and five negative ones and identified one new positive customer value type, "Trustworthiness".

Secondly, in this study, we considered the construction industry and chose partition wall systems as the object to focus on. This focus is essential as there is not much-paid attention to marketing context-specific studies in the construction industry (Stremersch et al., 2022), particularly customer value. One of the important reasons is the construction industry is complex and the decision makers can vary in different projects (Kamara et al., 2000). Therefore, according to the literature there it is a process with several actors; the decision-makers are different, and the customer values could differ for each actor. Consequently, we considered all these limitations and focused on the phases of design and construction actors to explore the relevant customer value types.

Finally, to address the lack of a specific scale encompassing all value types, we propose an outline for scale development using a customer value index (CVI) incorporating the updated customer value typology. Therefore, we provided the outline as a practical tool for further scale development, measuring and assessing customer value comprehensively. This outline includes all the 37 customer values that fall into the 12 CVI customer value types.

Overall, our theoretical contribution aimed to fill the gap in marketing context-specific studies in the construction industry, particularly regarding customer value. By incorporating the unique dynamics of the industry and expanding the understanding of customer values, the research added valuable insights to the existing body of knowledge.

5.2 Managerial contribution

We create knowledge not only to serve academic purposes but also to facilitate the implementation of marketing management (Stremersch et al., 2022). The findings of this study could be highly beneficial to various stakeholders in practice. We will explain the recommendations for two different types of stakeholders separately. First, we focus on the customer side, including design and implementation actors and end-users, who create real value-in-use, and then in the next part, we will mention the recommendations for the service providers (manufacturers) creating potential values for the customers.

- **Recommendation for the project stakeholders**

On the customer side, any decision-maker can include all value types when weighing the benefits and costs of systems and materials in the decision-making process. This finding considers all the benefits and costs associated with the entire construction process rather than just the immediate end-user benefit. For instance, if the end-user is the decision-maker, this might make the end-user aware of the various values considered during the construction process. This is why, in this study, we focused on exploring the value types by interviewing several actors during the design and construction phases. In the design process, actors such as specifiers like architects can benefit from these insights by being aware of the holistic customer values mentioned in the design phase actors and the essential customer values in the construction phase. This is also true for actors in the construction process, who can learn what specifiers and architects value in partition walls. This awareness will also lead to less risk of conflict and more divergence among all the stakeholders. They consider all the value types facilitating value creation for end-users based on their needs and wants. Thus, we recommend that every mentioned actor who is the decision maker in a project (as the decision maker can vary in different projects) consider all the explored value types and evaluate the existing choices for the partition walls.

- **Recommendations for the service providers (manufacturers)**

The manufacturers or producers can highly benefit from the result of this research. Their managers may examine all relevant customer value types and evaluate the value propositions of their existing systems to determine how well they align with the values perceived by different types of customers. This evaluation can assist firms in analyzing their consumers' wants and needs and adjusting or altering their value proposition to be more pertinent to a variety of actors. Combining our findings and the relevant literature (Leroi-Werelds, 2019; Leroi-Werelds et al., 2021), we propose a guideline (Figure 7) for firms that produce materials and services. It consists of five steps and two important actions that any organization can take, starting from examining the project's stakeholders and personas to applying the explored value types in this study. Next, they should measure the explored customer value types and rank them according to their relative importance. In this stage, they can also use the model provided by Kano (1984), letting them classify the explored value types based on the insight coming from customers, as they do not value every value type in the same way. Then, the companies should compare the customer value types to their value proposition and see how aligned they are with what customers perceive as value. For this aim, the importance/performance matrix can be a proper tool to evaluate the performance for each value type based on their importance. In the final phase, they should take actionable steps to align their value proposition with the identified and prioritized customer value types.

Furthermore, as is shown in the framework, it should be mentioned that producers should regularly assess market trends and external event triggers (Leroi-Werelds et al., 2021). This is because external event triggers may affect the priority of the customers and stakeholders for the explored value types. For this reason, Leroi-Werelds et al. (2021) elaborated on the characteristics

of external event triggers and the elements and strategic dimensions of value proposition dynamics and the steps that the producers can consider to adapt their value proposition dynamics.

Additionally, the companies can continuously look at the value types that their competitors offer, producing similar systems or other types of partition walls, analyse them and find out where they stand in the market compared to their competitor's value propositions. These competitors could be the companies which produce the similar type of partition wall systems or the ones producing different type of partition systems with different material and details.

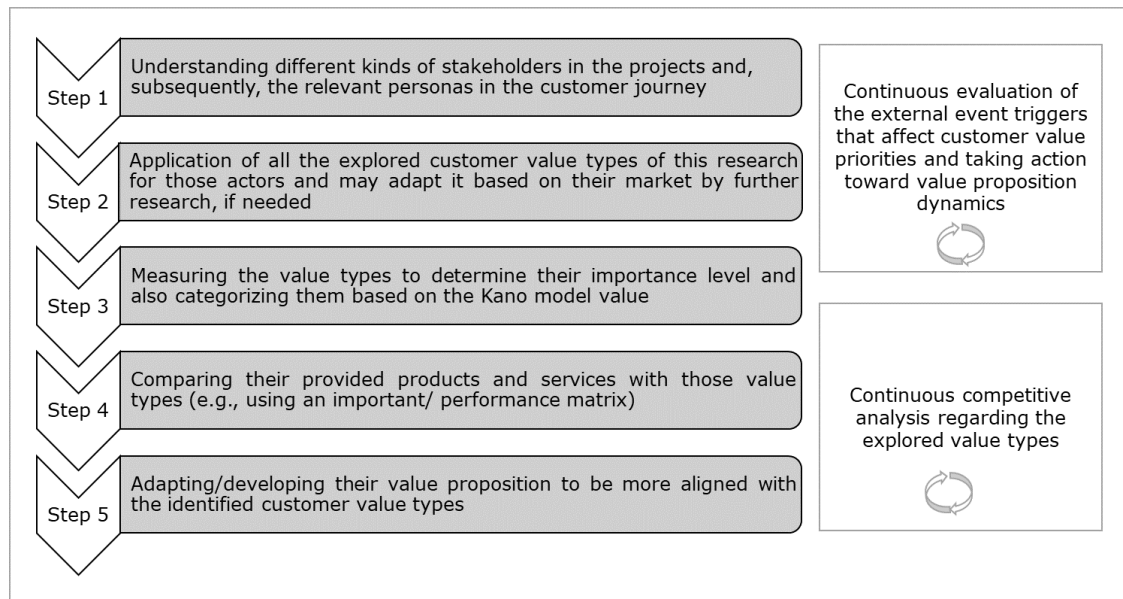


Figure 7: Framework of the customer value evaluation and actions by service providers

5.3 Limitations and Future Research

Our study included various limitations that could be exploited in future research. First, we concentrated on the two construction phases of the construction life cycle, including design and implementation, in this study. However, as previously stated, the researcher's priority should be the person who uses the product, as they can create real value-in-use. Although the customer values perceived by those actors lead to meeting end-users needs, we did not include an interview with end-users in the study. This was due to the time constraints of writing a master's dissertation and the difficulty in reaching out to the correct people in such a short amount of time. As a result, future research should include conducting more in-depth interviews with all actors involved in the partition wall system development process, including end-users. It is also important to note that we interviewed actors in certain phases, but they were not the only actors in each stage. Future research could involve other personas, such as structural engineers, electricians, and so on, to gain a more holistic perspective.

Second, the majority of the interviewees resided in Belgium. Future research could look into other countries to investigate more customer value types and compare the results. This is significant

since each country has a distinct culture and regulations and different needs and values for the stakeholders. As a result, certain customer values may be irrelevant to customers, and other customer values may emerge in future studies.

Third, by giving an outline for constructing a scale, we took the first step in researching customer value in partition wall systems. Therefore, future studies could focus on additional research to develop a multi-item scale that aligns with solving the issue that the researchers frequently bring up, the absence of a clear measurement tool for customer value (Leroi-Werelds, 2019). We encourage the researchers to develop the scale and then conduct quantitative research data to measure each customer value type and investigate the relationship between each value type and important outcomes such as repurchase intention, satisfaction, etc. They can also use this strategy to rank the list of relevant customer value types depending on their importance to the customers. Following that, as it was recommended in the managerial recommendation, it is helpful to classify different types of customer value using the Kano model, for example, to see which customer value type belongs to the delighters category or another type of value in the model.

Although context-specific research has scientific merit, the construction industry has received less attention from marketing researchers (Stremersch et al., 2022). Future studies could take advantage of these kinds of research and focus on exploring the customer value of different objects in this industry. For example, researchers can do exploratory research followed by descriptive studies on smart homes or digital tools that bring value to customers and may lead to significant outcomes.

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Appendix

Appendix 1: Interview Guideline

1- Introduction & Privacy

- Introduction of the interviewer: name, study & university
- Purpose of research
- Declaration: on anonymity & privacy, independence, confidentially, recording permission
- Rules of discussion: no wrong answer, the experience of the interviewee, not a knowledge test
- Can I record? So that I can spend more time listening and discussing rather than taking notes.
- Duration: 30 minutes
- Pseudonym

2- Warm-up Questions

- Could you briefly introduce yourself? (Main points: Study background, organization, job position, job experience, age, location)
- Would you describe what you do exactly on an average working day?
- Are you proud of your job? What do you like best about it, and what do you not like?

3- Core questions

Design phase actors:

1. In which type of the project are you the decision maker for selecting partition wall systems?
2. Consider the building and focus on the partition wall systems; we have different types of partition wall systems in the market with different features; what factors of the partition wall systems do you consider in the decision-making process?
 - Why is this factor important? (Name one by one they are mentioned and ask for explaining why?)
 - What else? Why?
3. What types of attributes are important for each space of the building? (For example, bathroom, kitchen, etc.)?
 - Why?
4. What positive and negative attributes of the partition wall material do you consider important?
 - Why are they important?
5. Do you think there are any risks associated with using partition walls?
 - If yes, which ones?
 - If no, why not?
6. Can you compare the different types of partition wall systems in the market?
7. What type of partition wall system do you often choose in your design?
 - Can you describe their positive and negative attributes? Why are those attributes important to you?

8. What type of partition wall systems are you not eager to use in the projects?
 - Can you describe their positive and negative attributes?
 - Why do they affect your decision?
9. How do you describe the best partition wall systems available in the market?
 - Why do those attributes make them the best?
10. How do you describe the worst partition wall system in the market?
 - Why do those attributes make them worst?
 - How could it be improved?
11. What features do you expect the ideal partition wall system to have?
 - Why are those features necessary to exist?
12. Do you expect any support from the producers of partition wall systems? (For example, social responsibility, digital tools, technical support, etc.)
13. How about sustainability? Do you think it is important to be considered a serious issue in choosing partition wall systems?
14. How about technology? Do you think how the partition wall systems will change in the future?

Implementation phase actors:

1. In which type of the project are you the decision maker for selecting partition wall systems?
2. Consider the building and focus on the partition wall systems; we have different types of partition wall systems in the market with different features; what factors of the partition wall systems do you consider in the decision-making process?
3. Why is this factor important? (Name one by one they are mentioned and ask for explain why?) What else? Why?
4. What positive attributes of the partition wall systems are important in construction? Why is it important?
5. What negative attributes of the partition wall systems are important in construction? Why is it important?
6. What positive and negative attributes of the partition wall material do you consider important? Why?
7. Do you think there are any risks associated with using partition walls?
 - If yes, which ones?
 - If no, why not?
8. Can you compare the different types of partition wall systems existing in the market?
9. What type of partition wall system do you often choose in your projects?
 - Can you describe their attributes?
 - What are their benefits?
 - Are there any drawbacks?
10. What type of partition wall systems are you not eager to use in the projects?
 - Can you describe their attributes?
 - Why do they affect your decision?

11. How do you describe the attributes of the best partition wall system available in the market?
 - Why do those attributes make them the best (benefits)?
12. How do you describe the attributes of the worst partition wall system in the market?
 - Why do those attributes make them worst (disadvantage)?
 - How could it be improved?
13. What features do you expect the ideal partition wall system to have?
 - Why are those features necessary to exist?
14. Do you expect any support from the producers of partition wall systems? (For example, social responsibility, digital tools, technical support, etc.)
15. How about sustainability? Do you think it is important to be considered a serious issue in choosing partition wall systems?
16. How about technology? Do you think how the partition wall systems will change in the future?