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Servitization for a Circular Economy in Construction

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ABSTRACT

Circular economy is pronounced in UN's Global Goals agenda 2030 as an alternative model for traditional linear production and consumption. *Servitization* refers to an increased resource efficiency and mitigation of climate effects by adding a service dimension through service-based offerings (e.g., leasing and rentals), which are key to circular economy. The construction sector has large climate impacts where renting can contribute towards a more efficient resource use in this sector. The aim of this study is to explain factors that influence business customer behavior related to equipment rental in the construction industry, using a qualitative case study design and a Social Practice Theory perspective. This study explores how equipment renting in the construction industry could be used to the corporate sustainability communication and strategy. Findings suggest that convenience, performance, and clear communication of values are key motivators for service offers.

1 | Introduction

Roles and responsibilities of industries and business are examined as part of finding sustainable development pathways considering the continuously increasing consumption of finite resources. An alternative perspective to the prevailing linear understandings of economy is captured in the circular economy (CE), which is connected to UN's Global Goals agenda 2030 (Global Goals 2020), especially Goal 12 aiming for a "Responsible consumption and production." Goal 12 targets sustainable management and efficient use of natural resources to reduce the waste generation and encourage companies to adopt sustainable practices (ibid.). The concept of CE also refers to the Global Goals related to energy, economic growth, and climate change. CE offers an alternative to a linear understanding of the economy, with a cradle-to-grave perspective (Ellen MacArthur Foundation 2013) and an extended producer responsibility of the product after end consumption. CE can be seen as a framework of resource management with the idea of resource loops, where waste is minimized and materials are reused, recycled, or repaired to be kept in use as long as possible (ibid.; Bocken et al. 2016). Business activities such as offering use-oriented product service systems (PSS) (sharing, pooling, leasing, and renting) as well as by selling and restoring used products are promoted to contribute to a circular economy (ibid.; Bocken et al. 2016; Ghisellini et al. 2016) instead of just selling physical products. However, a transition to a CE is associated with challenges. While the concept of CE has gained traction in a business settings in general (Ramboll 2019) and among academia (Seles et al. 2022), CE is still a relatively new topic in the construction industry (Leising et al. 2017).

The construction industry puts a significant pressure on the natural environment (Röcka et al. 2020). On a global scale the construction industry uses 40% of the materials in the global economy (Leising et al. 2017, 977). The use of finite materials and emissions constitute sustainability challenges. In 2017, the emissions by the construction industry represented 19% of Sweden's total emissions (National Board of Housing, Building and Planning 2020, 1). Generation of waste is also a problem, where construction is second to the mining industry in terms of generated volumes (Svenska MiljöEmissionsData 2018).

Possible approaches for the construction industry and businesses to increase its sustainability impacts and reduce its footprints are through a number of actions such as the selection of construction materials (Pelli and Lahtinen 2020; Penaloza et al. 2016), methods for using and re-using materials (Ebenheardt et al. 2019), and inclusion of all functions not only in the industry of the circular economy (Kalmykova et al. 2018; Seles et al. 2022) but also in systems for usage of technical equipment in construction processes (National Board of Housing, Building and Planning 2018; Leising et al. 2017; S&P Global 2023). This study contributes to the understanding and capacity to find new sustainability solutions within the construction industry by focusing on use-oriented product services such as equipment rental. Various forms of service offers have been studied in different industrial settings (Table 1). This trend, which the construction industry shares with other sectors, is sometimes labeled "servitization." It means that businesses offer and capture value by delivering services and solutions (Brax and Visintin 2017).

Servitization (Table 1) is developed for industrial marketing needs and for consumer markets. The focus in Table 1 is placed on studies related to construction with one additional reference to the consumer market for textile, for reference. The services industries account for 70% of world GDP (Lanz and Maurer 2015, 1). Services are traded as direct services, indirect services (i.e., services embodied in goods) or through capital, people, or goods, increasingly produced in networked arrangements. A service network involves different services throughout the value chain that might be affected by technological change, distribution, or policy (Kowalkowski et al. 2017; Lanz and Maurer 2015).

Business models based on leasing may promote several gains: efficiency, maintenance and repair, and improved training (Sakao et al. 2011) as part of relationship marketing (Rexfelt and Ornäs 2009). With the construction sector in mind, Sakao et al. (2011) argue that the industry has the potential to offer PSS that combine products and services, to integrate the two concepts in the whole lifecycle, development, delivery, use, and, ideally, re-use (Ebenheardt et al. 2019). In other words, the customer buys a service to gain the functionality or performance of products.

The lack of business to consumer (*B2C*) solutions regarding PSS is addressed by Rexfelt and Ornäs (2009). They claim

TABLE 1 | Contemporary research in the area of services of relevance for the construction industry.

Key concept	Context	Main findings	Author (year)
PSS, product system services	The retail sector	Two vital factors of consumer acceptance of PSS: uncertainty reduction and relative benefits.	Rexfelt and Ornäs (2009)
B2C leasing	Solar power systems	Customers often feel uncertain towards investing in new technology. Leasing may in these cases reduce the customers' perceived risks.	Shih and Chou (2011)
PSS, product system services	Construction sector	PSS in construction can meet the customers' requirements on functionality performance, through, for example, recycled product certification.	Sakao et al. (2011); Shooshtarian et al. (2023)
	Construction machine industries	To increase customer acceptance of PSS focus should be on solutions regarding perceived complexity, unknown needs and cost/prices.	Schmidt et al. (2016)
Servitization	Global value chains	Servitization in manufacturing. Services are traded through the movement of people, capital, or goods.	Lanz and Maurer (2015)
		Identified challenges for implementation.	Nyvall et al. (2023) Kamal et al. (2020)
Resource use	Climate impact in construction	Needs for sustainability impacts to be included already in the design phase of buildings (to enable disassembly).	Ebenheardt et al. (2019)
	Circular systems	Importance of performance indicators System efficiency, resilience.	Singh et al. (2023); Kennedy and Linnelucke (2021)

that uncertainty reduction and relative benefits are crucial for consumer acceptance of PSS. A transition from goods to PSS changes and affects how customers pay and which activities they engage in. The authors also conclude that variable needs was a reason avoiding ownership (Rexfelt and Ornäs 2009, 687). However, the transition to PSS might also come with new underlying responsibilities that create a conflict between the parties involved (Rexfelt and Ornäs 2009, 687; Akbar and Hoffmann 2018; Nyvall et al. 2023).

In business to business (*B2B*), PSS may offer partial solutions that supports sustainable development (Global Goals 2020), CE (Ellen MacArthur Foundation 2013), and new resource-efficient business models (Bakker et al. 2016). However, the changes to more sustainable industry and business practices are associated with numerous challenges (Hargreaves 2011). One of the major challenges concerns *customer perspectives on "green" products*. Green in this case refers to having been designed to have a minimal impact on the environment (Dangelico and Pontrandolfo 2010, 1609). Customers express concerns for the environment, but their attitudes are not always reflected in the consumption or management of resources (Luzio and Lemke 2013; Wever et al. 2008). It can be argued that customers do not purchase green products as they do not value green product attributes (De Groot and Schuitema 2015). Customers' appeal to purchase green products might be limited by forced trade-offs on important attributes compared with conventional products, such as price, quality, and performance (Olson 2013; Wever et al. 2008). De Groot and Schuitema (2015), on the other hand, argue that customers are influenced by green product attributes. The literature on green preferences and whether it pays to prioritize sustainability in the business strategy is overwhelming, and results are very contradictory and depend on the context and scope (Ribeiro and de Meiros 2017).

The aim of this study was to explain the factors that influence customer demand in the construction industry for equipment rental, for example, power tools and temporary electricity to compaction, cleaning, and concrete equipment as a green alternative. Key questions relate to motives for choosing rental over purchasing in construction services.

- What are the reasons for B2B customers' choice of rent equipment (as opposed to purchasing the physical product)?
- What kind of sustainable product (equipment) attributes and services do the customers value?
- How can a sales agent and service provider influence the customers to consider rental as an alternative to purchasing?

This research is based on a flexible design of a single case study focusing on equipment rental, in a Swedish context. The focus is on B2B[1] and how customers perceive rental in the equipment rental industry. Equipment rental consists of many different product segments, but this research does not make a distinction between different kinds of rentals such as leasing or short-term rentals.

In the next section, the approach, theoretical perspective, and method are presented followed by an account for the empirical study that is discussed considering contemporary research, which provides grounds for conclusions and suggestions for continued research.

2 | Theoretical Perspectives on Value Creation Through Rental

To move away from the linear model and towards a circular model of resource consumption, services are proposed as a solution (Ellen MacArthur Foundation 2013; Ghisellini et al. 2016). The concept of services has traditionally been difficult for the researcher to define (Lovelock et al. 2015). Freeman widely defines services as "services are anything sold in trade that could not be dropped on your foot" (Freeman 1989, 329). Lovelock et al. (2015, 8) on the other hand define services as "economic activities between two parties, implying that value is created for both seller and buyer." However, Hockerts (1999) argues that services and material goods are closely linked, for example, order groceries and get it delivered to the door together with recipes. Services are dependent on its customer, and therefore, providers must establish contact with their customers (ibid.). This relationship can be described as a service-dominant logic that implies that value always is co-created with the customer (Vargo and Lusch 2008; Ng and Briscoe 2011; Nariswari and Vargo 2024). In other words, the customer and the business are jointly involved in the creation of value, and the value of an offering is achieved in-use instead of at the exchange of ownership (ibid.). Co-creation of value is only achieved when customers participate during the production, delivery, and consumption of the service (Lovelock et al. 2015).

According to service dominant logic, a service consists of both tangible and intangible elements. Most concepts consist of a combination of tangible and service components (Lovelock et al. 2015). In fact, as the manufacturers started to add services to their tangible products the distinction between services and goods has become blurred (ibid.). Hockert (1999) has combined the elements of institutional arrangements and interaction and identified three service concepts (Figure 1).

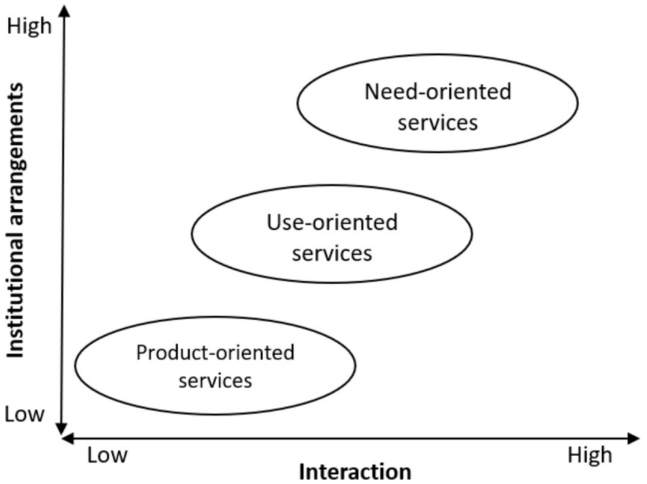

FIGURE 1 | Three service concepts with various degree of institutional arrangements and needs for interaction between stakeholders in the service production (Hockert 1999, 98, with minor modifications).

The matrix defines three service concepts as part of servitization; *PSS* offer services that are added to a sold product (Hockert 1999). *Use-oriented PSS* mean that the provider no longer sells a product but the use of a product, for example, renting, leasing, or pooling options. This approach requires a higher level of interaction and institutional arrangements. It encourages the service provider to increase the service life of a product and reduce costs regarding maintenance and replacements. *Need-oriented services* are based on that the service provider guarantees a certain result rather than a physical product. In other words, the service is no longer connected with a product (ibid.). Hockerts presented this model as early as 1995; since then, the model has been developed by Hockerts himself and other researchers such as Rexfelt and Ornäs (2009).

Despite differences in interpretation of the servitization concept, researchers agree that there is a shortage in knowledge about servitization (Lodefalk 2013; Rexfelt and Ornäs 2009), especially regarding the customers' perspective. Rexfelt and Ornäs (2009) argue that businesses struggle to understand customer needs and requirements since "not understanding customer requirements is the main cause of service failure" (ibid., 678). A shift towards a customer-oriented approach in marketing means "that knowledge of consumer behavior is becoming increasingly important" (Jensen 1996, 60). Consumer behavior in this case is not just purchasing behavior but rather related to customer needs and practical use, practices, interpreted in Social Practice Theory (SPT) in this project.

SPT offers a cultural theory perspectives that focuses the attention on practices instead of the individuals who perform them (Hargreaves 2011; Reckwitz 2002). In other words, practice becomes the core unit of analysis. A practice can be defined as "a temporally and spatially dispersed nexus of doings and sayings" (Shove et al. 2012, 15). Reckwitz (2002, 249) defines a practice as a behavior created by interconnected elements such as "forms of bodily activities, forms of mental activities, 'things' and their use, background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge." Further, Schatzki et al. (2001, 3) state that "understanding specific practices always involves apprehending material configurations." This calls for methodological awareness in collecting and interpreting data as the data is bound to a context.

Shove and Pantzar (2005) combine the ideas by Schatzki and Reckwitz of a practical approach of consumption that defines a practice as "the active integration of materials, meanings, and forms of competence" (ibid., 45). To describe a practice, Shove et al. (2012) created a simplified model consisting of the elements "images (meanings, symbols), skills (forms of competence, procedures) and stuff (materials, technology) that are dynamically integrated by skilled practitioners through regular and repeated performance" (Hargreaves 2011, 83) (Figure 2).

The model describes how practices are done by interdependent relations between three elements: materials, competence, and meanings (Shove et al. 2012). All three elements must be captured in studies of a SPT interpretation of "practice." Practices

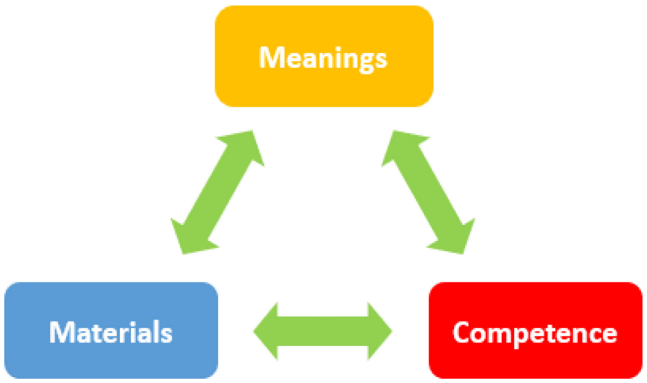

FIGURE 2 | Elements of practice (Shove et al. 2012, 25, with minor modifications).

change; they are born and die when linkages between the elements are created or broken. The integrations between the elements are therefore mutually transformative. SPT offers a conceptual model of how practices are reproduced, stabilized, and maintained (Hargreaves 2011). It focuses on how to recruit and encourage practitioners to practices to maintain and strengthen the performance of more sustainable practices.

New practices contribute to new forms of production and consumption (Shove and Pantzar 2005). Warde (2005, 137) states that "consumption is not itself a practice but is, rather, a moment in almost every practice." Since consumption is a part of practices, practices become important for sustainability (Spurling et al. 2013). It is clear that there is a need for education or persuasion to alter customer practices for a sustainability transformation (ibid.). An individual who gains a positive experience by performing a certain practice might increase his or her engagement and develop experience further (Shove et al. 2012; Warde 2005). Practices start to evolve and change meaning when the number of engaged practitioners increases (Shove et al. 2012). In other words, sources of changed behavior depend on the development of practices (Warde 2005).

Critics against SPT claims that the theory has not developed any set of tools for managing behavior change (Spotswood et al. 2013). Environmental problems present societal challenges often called socio-technical transitions (Geels 2011). The concept involves alterations regarding the configuration of energy, transport, and food systems and entails consumer practices, infrastructure, policy, technology, scientific knowledge, and cultural meaning (ibid.). However, SPT contributes with a multidisciplinary view on social marketing and might provide tools to build sustainable practices such as legislation, diverse social marketing, and infrastructure change (Spotswood et al. 2013).

3 | Method

As the aim of the study is to create an understanding of customers' perspectives of green equipment rental as an alternative to purchasing, an inductive approach using a qualitative case study design was selected. Case studies are commonly used in the need for understanding complex social phenomena (Yin 2009). The study's exploratory aim to shed light on a

topic that is undeveloped and fragmented (Robson 2011). A case study involves a real-life phenomenon and an investigation consisting of multiple sources of evidence and tools (Robson 2011) where "the interaction between a phenomenon and its context is best understood through in-depth case studies" (Dubois and Gadde 2002, 554).

A flexible research design (Robson 2011) was chosen as it allows for adaptations as the research project proceeds. Personal interviews were conducted with industrial customers, based on SPT themes (meanings, materials, and competence). This study's purpose is to create an understanding of the customer's perspective of equipment rental using SPT. As the explanations of practices, that is, actions taken, constitute the unit of analysis in SPT-studies, a case study approach become a natural choice (Reckwitz 2002).

3.1 | Selected Case

The focus in this case study lies on customers' practices in the construction industry. To find a variety of customers, a large well-established company that offers equipment rental and sales, Cramo, was selected. The reason for selecting a well-established company is based on the understanding that testing a new marketing model, rental services, instead of just sales of physical products, assumes resources to do so. Cramo is one of Sweden's leading companies in equipment rental and serves as variety of customers in the private and public sectors (Cramo 2020a; Cramo 2020b). At the beginning of 2020, Cramo advanced and promoted that through the Cramo Nxt Strategy, they are moving towards circularity by (1) replacing the concept of a consumer with that of a user; (2) replacing nonrenewable fuels and increase the use of renewable energy; and (3) increasing the life span of rental units (Cramo 2020b). Cramo has a network of 300 depots in the Nordic countries, Central and Eastern Europe, and provides a wide variety of products and related services. This study focuses on one large company to observe the phenomenon and its context through an in-depth case study as suggested by Dubois and Gadde (2002, 554).

3.2 | Data Collection and Quality Assurance

A flexible design was used to ensure reflective learning in the research process, and triangulation to ensure the study's credibility in accordance with what is recommended by case experts (Yin 2009). To create an understanding of practice, with regard to both customers and service providers, multiple sources of information were used. The empirical data consist of semistructured interviews in person, by video, and phone interviews.[2] Secondary sources, such as webpages, reports, and newspapers, serve as empirical background.

A selection of customers was based on a convenience sample, through the authors' contacts and with the help of representative from Cramo. Interviews were conducted with 10 of Cramo's business customers. The selection of respondents was based on two criteria: (1) geographical area of Stockholm to Uppsala and (2) frequent renting of construction equipment. Six customer companies were selected. The interviewed respondents had varied roles such as sustainability specialist, project manager, and construction site worker. The number of respondents needed was not decided ex ante in the study. When empirical saturation was achieved, no further perspectives and respondents considered needed.

The themes for personal interview questions were based on SPT, meanings, materials, and competence, but translated to every-day language. The questions are more closely presented in Tables 2–4, where each table offers a presentation of a SPT theme. Interviews in-person and well-planned person-to-person questionnaires are resource intense methods for collecting data, but they are motivated by increased response rate and a possibility to ask follow-up questions as part of validation.

The interviews were on average 30 min long and were conducted in Swedish to minimize language misinterpretations during data collection. All interviews were recorded and transcribed with informed consent including GDPR procedures. The transcription was translated to English. As this study's purpose is to create an understanding of customer behavior and their perception of rental as a phenomenon, a social constructivist approach was used when transcribing the interviews. In a constructivist approach, shared understandings of meanings are created in a stepwise validation process, during the interview and ex post. A transcription was sent to all respondents for confirmation to validate the data and to give the respondents a chance to elaborate on their replies.

A thematic content analysis (Vaismoradi et al. 2013) was performed based on the empirical material, focusing primarily on the replies from the respondents. A thematic analysis was suitable because the SPT framework was selected as a conceptual framework, but it did not exclude an openness to additional explanatory factors. The analysis included the following steps: identification of themes (SPT in this case), research design (questions that cover these themes), interview, data transfer, analysis and writing up a report—all in accordance with procedures suggested by Kvale (1996).

4 | Results—The Cramo Case Study

The history of Cramo dates back to 1953 when the company began operating in Finland as Rakentajain Konevuokraamo Oyj (Cramo 2020a). The company is operative with over 300 depots in 13 countries in Scandinavia, Central, and Eastern Europe and had 2018 a turnover of 632 million euros (Cramo 2020c, 1). Cramo provides modern rental solutions with everything from short time leasing of construction machinery to a general contractor of large projects, equipment, and rental services. The rental fleet can be divided into segments: tools, plant, lifting, generations and heating/cooling, fencing and edge protection, and on-site constructions. The company serves both the private and public sectors, construction companies, and the manufacturing industry. Cramo offers different types of services to simplify the customers renting process.

As an experienced company in rental services, Cramo has a position to develop markets for rental further. The following text the empirical study of customer perspectives structured in

accordance with practice theory elements, meanings, materials, and competence, to reflect customer perspectives.

4.1 | Meanings

Table 2 presents the detailed data connected to the element Meanings (Shove et al. 2012). The table summarizes the interviewed customer's symbolic meanings, previous experiences, values, and socially shared senses connected with equipment rental.

The answers to the question of why businesses rent equipment was almost identical between all respondents. Costs and practical aspects, such as the reduction of maintenance costs and stockholding. Most of the businesses both rent and buy equipment while larger businesses rent almost all equipment and machinery to their building's sites. One commonality is that all businesses usually buy light equipment such as hand drills because those do not require huge capital investments and are used frequently. The businesses that buy and rent equipment usually rent equipment that requires large capital investments, less frequently used or as complement to their own equipment fleet during large projects. The size and time horizon of the project, and how frequently the product is used, influence whatever it is most economical to either buy or rent equipment.

Except for the economic and practical aspects of rental, the respondents mention easy access to new modern technology and products as the main advantage of renting equipment. Knowledge is both mentioned as a benefit and a challenge with rental. Ordering online, digitalization, is not seen as a desirable solution. The knowledge exchange at the depot is useful and to rent equipment through the rental business's online services are considered as difficult as it requires experience and useful knowledge exchange is not available. Further, the main negative aspect of renting is unforeseen

TABLE 2 | Meanings: A shortlist of respondents replies to the question "why rent?" Pros and cons with rental services.

Question	Answer
Why do you rent?	Economic reasons—efficient, no need of large investments and tied capital
	Reduce costs regarding maintenance and stockholding
Pros with rental	Economic reasons—efficient, no need of large investments and tied capital
	Reduce costs regarding maintenance and stockholding
	Knowledge exchange
	Access and modern technology
Cons with rental	Requires knowledge
	Unforeseen events and delivery
	Difficulties to negotiate terms
	Requires commitment
	The price
Have you considered the environmental aspects of renting?	Believe buying is more sustainable than renting
	Agree but do not consider environmental aspects in their work
	Agree but not always economically sustainable
	Agree and consider it in their work
What aspects influence the choice of equipment rental provider?	Relationship/collaboration
	Price
	Delivery time
	Close to a depot—quick and easy access to equipment
	Functioning equipment
	Great service—relationship and collaboration
What kind of requirements do you have on equipment rental firms?	Delivery of functioning equipment
	The Swedish Transport Administration's environmental requirements
	Depending on sponsors requirements

events and the delivery of new equipment in these situations. The respondents argue that it is difficult to plan for unforeseen events such as machinery that breaks, which makes availability an issue.

Regarding the environmental aspects of rental, most of the respondents answered that they believe buying equipment is more sustainable than rental. One respondent argues that equipment that is owned by the user is handled more gently than rental equipment. Others add an economic aspect of the situation and argue that rental cannot be more sustainable as, in the long run, it is more expensive than buying equipment.

Delivery time is a key factor for the choice of rental provider. The short delivery time of equipment is considered as vital. Further, short delivery time often requires access to a depot in the local area and enables the availability of picking up equipment themselves. The price and economic factors also have a big impact on the choice of rental provider. However, a good relationship and collaboration between the respondent and the rental business, as well as good service and functioning equipment, are considered important factors.

TABLE 3 | Materials: A shortlist of respondents' expectations on rental services.

Question	Answer
When renting, what kind of product attributes do you require?	Ergonomic aspects
	The Swedish Transport Administration's environmental requirements
	High performance and efficiency
	Price
	Energy source
If considering green products, which attribute do you value?	Energy source
	Depending on the sponsors requirements
	The Swedish Transport Administration's environmental requirements
	Must have de same level of performance and efficiency as conventional products

4.2 | Materials

Expectations from the customers of equipment rental on functions are reflected in Table 3 in terms of materials (Shove et al. 2012).

The required green product attributes are depending on the sponsor's requirements, but the most vital factors regarding required product attributes are high performance and efficiency. Furthermore, the products ergonomic aspects are taken into consideration. A carpenter respondent emphasizes the importance of the ergonomic aspect "when you work 40 hours a week with a screwdriver, it must feel comfortable to work with." Once again, the price of the product is mentioned as an important part of product attributes and product requirements. A few respondents mentioned the energy source as a requirement.

On the other hand, the type of energy source was one of the most influential aspects when choosing "green products." However, some of the respondents did not consider the type of energy source as they usually only work with conventional products that already are electrically driven. Fossil free fuels and electrical driven equipment was mostly considered. The respondents emphasize that to even consider a green product, it must have

TABLE 4 | Competence: A shortlist of respondents replies to skills related to rental.

Question	Answer
When renting, is information regarding environmental aspects provided?	Not interested in the information
	Information available if asked for
	Great access to information
Do you ever consider that the usage of a product affects the products environmental impact?	Do not take it to consideration during the usage of the product, care about the economic aspect of usage
	Believe it is difficult to control how the products are used
Potential improvements and ideas for future collaborations	Increased collaboration
	Provide complete sustainable services that resolves needs
	Environment certification system of equipment
	Increased information of new products and assortment
	Visually present more sustainable alternatives

the same efficiency and level of performance as conventional products.

4.3 | Competence

Competence (Shove et al. 2012) is captured in this study by asking about understandings of environmental effects of rental. Most of the respondent answered that they are not interested or do not consider information regarding environmental aspects (Table 4). In either case, the respondents do however not look for, and they have not been given information regarding climate or environmental aspects.

Product environmental impact is mainly affected by the usage of the product. In general, the respondents mentions that the environmental impact is not taken into consideration during the usage of the product. If any consideration is taken regarding the usage of the products, the respondents mention costs related to maintenance and repair.

Increased collaboration is the respondents' most frequent answer regarding potential improvements. Several respondents emphasize the importance of increased collaboration and long-lasting relationships between customers and suppliers to increase efficiency.

Further, the respondents mentioned access to complete sustainable services that resolve problems as the second potential improvement. The respondents perceive that it sometimes is difficult to keep updated regarding new products and technology available on the market. A visual representation that guides environmental aspects would increase the customers' comprehension and ease the decision process. Another suggestion is to introduce an environmental certification system of equipment, such as "Healthy Buildings" (Sunda hus) or "Building product assessment" (Byggvarubedömningen). The equipment is reviewed according to several different aspects and rated with either letters or colors that makes it easier for the customer to create an understanding of the product and easier to follow and to implement into the business.

5 | Discussion

With the use of multidisciplinary research and a conceptual framework based on SPT, the results of this study show that environmental aspects are not taken into consideration when customers chose to rent. According to the results, customers chose to rent primarily because of the expected costs and for practical reasons. This project set out to explain the factors that influence customer demand for green equipment rental. SPT offers consumer perspective insights about rental experiences. The project also points to the vital role for communication in a market transition.

5.1 | Perspectives on Rental Versus Purchasingd

Depending on the customers' role, working at the office, or at the construction site, the customers perceive the benefits of rental differently. The results contribute to Rexfelt and Ornäs (2009) statement of how PSS might contribute to conflicts since customers perceive costs in different ways. This study shows that the construction site workers believe it is more financially efficient to buy than rent equipment. The office workers see other costs related to owning equipment, such as purchasing and maintaining the equipment. For them, rental appears to be a better alternative. However, according to the results, renting equipment does not completely relieve customers from everyday maintenance of equipment and responsibilities; it is also hard to avoid unforeseen events. The identified gap corresponds with Rexfelt and Ornäs (2009) argument that ownership-less consumption does not only relieve customers from everyday maintenance, it might also come with new underlying responsibilities that creates a conflict with the customer's freedom from responsibilities.

The results in this study show that the reasons for renting are influenced by the size of the business, stated by the interviewees from the customers in our study. Larger businesses tend to rent almost everything while smaller businesses both rent and buy equipment. For smaller businesses, benefits from renting or outsourcing do not offset the transaction costs that are associated with the sourcing decision (Chopra and Meindl 2016).

An interesting finding is that the results from this study partly correlate and partly contradict with Rexfelt and Ornäs (2009) argument that the customers' acceptance of PSS is depending on uncertainty reduction and relative benefits. To summarize, customers do perceive the relative benefits of renting equipment, but the benefits are perceived differently among customers, depending on their roles and business size. Further, as the group of customers with roles as the head office perceive reduced uncertainty when renting because of the reduced need for maintenance, logistics, and stockholding, while the construction workers perceived renting increasing uncertainty. When renting equipment, the construction site workers' are dependent on the rental business and its deliveries. The dependency increases unforeseen events beyond the construction site worker's control. According to the results, the construction site workers preferred owing than renting equipment, due to increased control. The results of the study, therefore, support Rexfelt and Ornäs' (2009) argument that uncertainty has an effect on the customers' acceptance of PSS.

5.2 | Valued Product and Service Attributes

In this study, customers rarely consider sustainability aspects in a rental decision. However, when renting equipment, the source of energy is vital in the decision-making process. These results partly contradict Shih and Chou's (2011) findings that customers are uncertain regarding emerging new technology, like renewable energy sources. In this case, the results show that customers to a high degree already use electrically driven equipment and perceive renewable energy sources as positive "green" attributes. However, customers are not prepared to negotiate performance or efficiency.

Regarding services, the results show that customers in this study expect sustainable services that resolve their needs. Schmidt

et al. (2016) state that the focus when developing PSS should be on solutions regarding perceived complexity, unknown needs, and customer cost. Customers expect increased collaboration and customer relationship with the rental providers. Increased personal contact seems to reduce unforeseen events and increase knowledge exchange.

5.3 | Going From Product Sales to Services

The results from this study contribute to the understandings of pro-environmental behavior from an SPT perspective. In contradiction to Högberg's (2019) studies, this study's results correlate with Lanz and Maurer (2015) argument that a service network's value chain is affected by technological change, distribution, and policy. The results show that customers do not perceive the digitalization of services as beneficial but wish for increased personal contact and collaboration. Furthermore, this study concludes that increased visual information and customer relationship is vital to contribute influence the customer towards environmental practices. This may translate as a transition in accordance with Hockerts (1999) model, from product to use or need oriented services (Figure 1). The development of environmental certification of equipment has been proposed as a possible solution to simplify the decision-making process and increase customer awareness of environmental aspects.

This study supports Spurling et al.'s (2013) argument that an SPT perspective can be used and how it may need to require recrafted elements to develop the understandings of sustainable practices further. This study proposes a suggested modification of SPT implementing a fourth element, *communication*, to enable a transition in practices supported by corporate servitization (Figure 3).

By strengthening the relationship between the elements in the SPT (materials, meanings, and competence) with communication, it secures the connection between the elements. In practical terms, it may relate to educational efforts, how to book a machine and tailor the rental to the needs, sensitivity to customer contexts with regard to availability for user support, and feedback on the environmental effects that rental may offer compared with purchasing. This indicates that successful implementation of CE in the construction industry has to be supported with communication that enables a balance between short-term profit in the interest of the industry stakeholders and long-term sustainability goals.

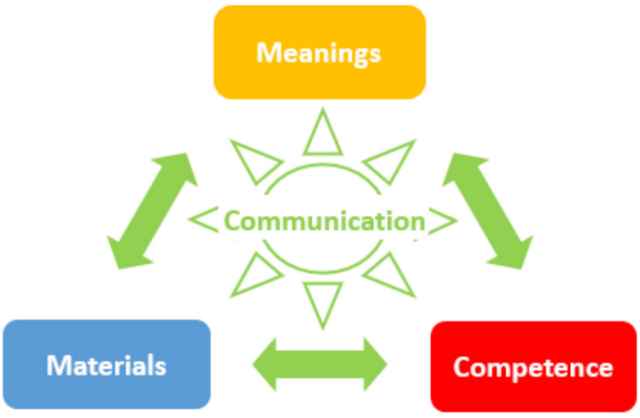

FIGURE 3 | Elements of social practice theory with an added element, communication to support the process of servitization.

The addition to communication to the SPT elements, which would address the critique by Spotswood et al. (2013) that SPT does not manage behavior change. It is clear that by adopting the element of communication, it is possible to influence the practitioners' motives to consider environmental aspects of their practices, such as renting.

5.4 | A Circular Economy in the Construction Industry

This project contributes to needs for understanding of consumer perspectives on rental in the construction industry. The case study does not serve as grounds for generalizing the results, but it offers understandings of the importance of customer perspectives in efficient resource use. It supports Hockerts' (1999) call for service dominant logic, to ensure customer perspectives on climate efficient designs (Ebenheardt et al. 2019), choice of recyclable materials (Röcka et al. 2020), and resource use as part of production methods (Schmidt et al. 2016) in sustainable construction.

In light of this ongoing transition to more sustainable practices in construction, our study supports the cognizance of needs for additional research to further investigate these fields:

- organizational aspects—enabling value system collaboration (Kamal et al. 2020; Singh et al. 2023; Seles et al. 2022);
- methods for measuring sustainability impact;
- communicating climate mitigating effects and the role of digitalization processes (Wihlborg 2020);
- climate effects of new production materials and models, such as modular construction (Högberg 2019);
- the role of legislative demands to drive markets for "time share of machines" (S&P Global 2023, 40–41);
- the use of environmental certification (Shooshtarian et al. 2023);
- practices for using life cycle analysis and material flows (Ekman 2018); and
- legislative means to push responsibility in the industry, such as extended product responsibilities (Byggindustrin 2019).

An increasing number of sustainable construction projects indicate a change in norms: "Sustainability is becoming mainstream" (Ramboll 2019, 5). Political goals, the new legislation regarding a net-zero carbon future, and financial incentives may also enable transitions to sustainable construction practices.

5.5 | Limitations

This study is based on B2B and the customers' perspective on equipment rental. The case study does not allow for empirical

generalization, but it offers understandings of a specific case. SPT offers a context bound understanding of conditions for management. Ideally, the empirical study would have been carried out as participant observations in addition to interviews, to take note of details of practices that are not possible to capture in interviews. The availability of green equipment was not the focus of the study because the aim was not to analyze the market but rather practices, relating to green product attributes in a rental process. More case studies from different industries and parts of the world would be helpful to understand the similarities and differences of factors influencing acceptance of servitization systems and how to overcome barriers of practice adoption by businesses and customers.

6 | Conclusions

Servitization offers a perspective on business models where practices, such as rental or leasing are central. This case study of construction industry practices of equipment rental offers practical insights to B2B customer motives and experiences of rental as a green alternative as quested by Kennedy and Linnelucke (2021) in their review of circular economy and resilience. It shows that the motives that influence customer practices, to rent, are mainly of economical and practical nature. A gap between customer perceptions of the economic and practical aspects of rental was identified. The study's main finding is that environmental aspects are rarely considered during the rental process by the customer. If considered, it is due to (upcoming) legislation or sponsor requirements. Regarding green product attributes, the study correlates with the current trend in the market and conclude that customers perceive renewable energy sources as most valuable. Further, customers are positive to green products but are not prepared to compromise performance and efficiency to increase environmental performance.

Practical implications of this study for businesses lead to careful consideration of performance and convenience for customers. Additionally, the findings suggest that increased availability of information, strengthened customer relationship, and communication influences customers to consider equipment renting as a green alternative. As suggested by Shooshtarian et al. (2023), environmental or sustainability certification may also offer benefits to simplify future expectations of sustainability declarations in construction. These factors combined can contribute towards raising awareness among customers of greener alternatives in line with expectations of a circular economy.

Finally, the study contributes with a suggested new element, communication, to the elements of practice and SPT. Understanding of the importance of communication as a new element might ensure the connection between the elements that enable practices to change towards increased use of services as part of a circular economy.

Making servitization part of a business strategy may open doors to new markets and customers. From this case, we can conclude that while servitization holds potentials for working towards a circular economy some challenges in perceptions, knowledge, and convenience need to be overcome by the industry and businesses to see a wide scale transition from traditional product and consumption practices.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

A thesis can be made available should anybody request more data. The data that support the findings of this study are openly available in Epsilon, the database for master thesis reports at the Swedish University of Agricultural Sciences at https://stud.epsilon.slu.se/15701/, reference number 2020:20. The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

Endnotes

[1] In this study, focus is placed on B2B customer relations and purchasing motives. However, we also use the word consumer and procurement as the literature in this field uses these concepts in conceptual models.

[2] Interview guides are available as supplementary materials (Berg 2020).

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