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Review

Relational Marketing Promotes Sustainable Consumption Behavior in Renewable Energy Production

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Abstract: Until recently, the prominent stage of electricity generation has been carried out by utility firms; however, the general landscape of power generation in the world is changing. The availability of low-cost photovoltaic panels is encouraging households to become local producers themselves and sell energy to the grid at a micro-scale. Therefore, the development of renewable energy production is increasing the domain of the energy market from pure product delivery to a market of mixed services and goods delivery, with new players entering the value chain. For this reason, utility firms need to rethink their marketing activities, their interface and interaction with the consumer, the infrastructure they need for the flow of their production to the consumer, and the architecture of their value proposition. Faced with the growing market for renewable energy services, this study investigates how utility firms should target marketing activities to take advantage of business opportunities in the newer networks of competitive coalitions. The results of the study carried out suggest that firms need to strengthen their competitiveness and capability in internal marketing, their core competence in technological development and personnel management, and their external marketing promotions. By doing so, firms will be able to compete with established technologies and generate revenue by treating the disruptive and innovative technologies of the distributed generation as the gateway to the service market, and prospect the S-D-dominant logic of marketing in their activities. Moving beyond the traditional electricity delivery culture of utility firms could open up new opportunities for growth and expansion to attract a greater number of consumers, as is done today in similar high-tech industries.

Keywords: relational marketing; sustainability; consumer behavior; renewable energy; business model innovation

Citation: Sadjadi, E.N.; Fernández, R. Relational Marketing Promotes Sustainable Consumption Behavior in Renewable Energy Production. *Sustainability* **2023**, *15*, 5714. https://doi.org/10.3390/su15075714

Academic Editors: Caterina De Lucia, Pasquale Pazienza and Diana Caporale

Received: 14 December 2022
Revised: 8 March 2023
Accepted: 22 March 2023
Published: 24 March 2023

1. Introduction

It is argued that the increase in renewable energy production and the self-dependence of consumers regarding energy demand have decreased the energy demand from utility firms and, thereby, their revenue [1,2]. Many authors believe that utility firms therefore need to adapt their business models, thus impacting their marketing activities [3–5]. This is the main subject of the current manuscript, which studies the marketing activities needed for utility firms to be able to handle new challenges.

Modified marketing activities assist firms in strengthening their position in the market, and the role of such activities is decisive in the energy transition of the new era in favor of technology acceptance in society [5]. The recent literature indicates that utility firms should consider the distributed scheme of renewable energy production as the entrance to the market of the service-good (S-D)-dominant logic of marketing [6–9]. However, the question is as follows: how will this change in dominant logic toward service inclusion impact firms' marketing activities?

1.1. Motivations of Studying Relational Marketing in the Renewable Energy Sector

Distributed generation is defined as the generation of electricity in smaller production facilities rather than in central generation plants, which facilitates the interconnection of nearby points in the power system. Therefore, in contrast to the traditional scheme of power generation, not all power demand is earned from central plants; it is generated by small generation plants positioned close to where the consumer resides, such as a small or medium-sized commercial unit. Moreover, each prosumer coproduces with other prosumers and plays a minority role in the generation being carried out with other prosumers in the community [10]. However, such a community is neither connected nor combined; hence, it needs consultation and support from technical professionals. In other words, instead of control, prosumers need backup and are even willing to pay to receive consultancy services. Hence, the social acceptance of prosumers and their role in the power grid plays an essential active role in the expansion of the market and in the development of firms' business activities. Indeed, these prosumers are mostly interested in knowing how the devices operate instead of directly paying to buy the energy.

What is clear from the definition of distributed power generation is that the business model and working scheme impact the attitude of central generation units and utility firms in maintaining their revenue. Until recently, the prominent stage of electricity generation has been carried out by utility firms; however, the big picture of power generation in the world is changing, and the speed of privatization is increasing. For instance, in 2014, Finish Energy Authorities announced that the private solar power system could reach 150,000 in 5 to 10 years from a few hundred in 2014 [11]. Moreover, in Germany, only 13.5% of the overall renewable generation capacity is owned by utility firms, with the rest being owned and operated by private individuals and investors [1,2]. The availability of low-cost photovoltaic (PV) panels could encourage households to become local producers themselves and sell energy to the grid at a micro-scale. In such a case, prosumers live in the vicinity of the point of production and own the production unit, and the energy is produced in private units [12]. The willingness and motivation to engage in coproduction impact the success or failure of the coproduced material or service. All the abovementioned factors can alter and modify utility firms' understanding of the business phenomena for the operation, implementation, and control of their business, which has been studied as a business model in the literature [13–15]. For this reason, utility firms need to rethink their marketing activities, their consumer interface and interaction, the infrastructure they need for the flow of their production to the consumer, and the earnings and architecture of their value proposition [5,16,17]. Hence the importance of studying how utility firms should orient their marketing activities to benefit from business opportunities in the new competitive coalition networks, and the novel structure of the relationship between consumers and suppliers with the aim of retaining old users and attracting new customers.

1.2. Current Situation and Benefits of Studying Relational Marketing in the Renewable Energy Sector

The coproduction of energy by the prosumer and new entrants has decreased the portion of energy injected into the grid by firms, with different levels across countries. Therefore, coproduction in the energy sector in general is neither initiated nor encouraged by an incumbent utility firm. To date, the loss of revenue due to low electricity sales has not been considered a major problem for utility firms in some countries, such as Germany and China [1,2,16,17]. However, with the increasing interest in the utilization of distributed energy generation, many private individuals will feed an excessive amount of own-produced electricity to the grid, thus lowering grid demand from utility firms and, consequently, lowering firms' earnings per consumer. In one report, Energie Baden-Württemberg (EnBW) predicted a drop in earnings from conventional generation and trading by expanding generation from renewable sources of energy and other innovative service-based campaigns through the expansion of 'customer proximity' solutions [18].

Therefore, in parallel with the decrease in electricity sales, it is believed that the expansion of the market of distributed generation offers new opportunities for and challenges to service delivery and consumer relationship management for firms. For instance, according to [1,2], 7400 mV of PV was installed in 2010, demonstrating that the market dimension is increasing in importance for revenue generation, especially in the service domain. Given that PV technology is just one technology in this area, the most important consideration is the capacity of firms to identify opportunities for revenue generation. The development of electric mobility can also be considered an attempt to widen the market and move the business further downstream. In a report, while none of the utilities in the studied samples of [18] had developed electric mobility by 2007, more than half of them (52%) did so by 2015. Managers, according to published interviews [1,2], believe either that the firm will use this market opportunity or that others will do so.

However, considering marketing theories, one proper remedy for the decline in market share is to retain old customers and provide new services to meet the new demands of the old customers, instead of continuing the old business and looking for new customers of the old service. In any case, provided that the firm cannot satisfy old customers with new demands for today's market and technology, the competitive firm will attract the customer.

The reality is that one of the principal opportunities of the distributed generation for marketing is to rely on the long-term customer relationship and carry on with retaining old consumers, as there are many new players on the stage who can attract and grab these customers. EDP's annual report in 2013 foresaw that with the new reality of the energy sector, long-term contracting for customer retainment is crucial [18]. Similarly, it is reported that Nord-Trøndelag Elektrisitetsverk (NTE) signed long-term contracts for 15 years in 2017, during which time the supplier is assumed to take responsibility for panel servicing and maintenance [19]. The motivation of such long-term contracts is that during the energy transition, managers are witnessing that with the application of information technology (IT) technologies and distributed generation schemes in power systems, the market is being invaded and harvested with new players and stockholders from the private sector and investors and companies from outside of the electricity sector, such as IT companies and startups in data management, which have made the market more complex and competitive [20,21].

Although there is enormous potential for activities in the market, which can be seized either by new players or the retaining of old consumers, and the arena is large enough, relational marketing and keeping old customers seems very important in crafting the new services and bundling products for consumers. Considering the spectrum of the new technological products and services in the areas of PV, combined heat and power (CHP), micro wind turbines, etc., there is a serious need to determine the new ways of business in the (post-)period of energy transition.

Therefore, the main contributions of this study are: (i) to apply the idea of relational marketing to utility firms; (ii) to identify the main influencing factors for relational marketing; and (iii) to carry out a comparative analysis that allows evaluating the benefits of relational marketing for both consumers and firms, as well as providing recommendations to firms in the renewable energy production sector.

The rest of the paper is organized as follows. Section 2 presents the background of relationship marketing in the energy sector. Section 3 describes the method used to study the recent marketing theories in the renewable power generation domain. In Section 4, an analytical framework is proposed to explore the benefits of relational marketing for both consumers and firms. Section 5 discusses the influencing factors for relational marketing. Sections 6 and 7 summarize the implications and results obtained from the relational marketing analysis and provide some recommendation to firms in the sector. Finally, Section 8 gathers the main conclusion, while Section 9 enumerates the limitations found in the present study and highlights the lines of future work.

2. Relationship Marketing Background in the Energy Sector

In the literature, relational marketing is considered the retention of consumers to gain their loyalty and continue business operations through the continuous positive evaluation of past customers of the service and product provision. This idea is assumed to be in contrast to that of finding new customers and satisfying their needs and wants [22,23]. The definition focuses on both maintaining current relations with customers and attracting new consumers. Hence, marketing would be considered the whole process of (1) attracting new consumers, (2) solidly relating to consumers, and (3) transforming indifferent consumers into loyal ones. Based on this definition, the above authors consider five elements of strategy for the real practice of relationship marketing: (1) core service development for making offers to the market and developing relationships with consumers; (2) relationship customization; (3) product and service augmentation by adding extra benefits; (4) pricing policy for consumer loyalty; and (5) personal marketing and training for the purpose of providing consumers with good treatment. Through the years, several publications have pointed out the importance of recognizing and fulfilling the needs of existing customers and maintaining such relationships for the purpose of reselling to old consumers, especially for intangible products.

Relationship marketing today is highly prominent in marketing practice and the literature. However, in the field of energy marketing, some companies offer social marketing packages, etc., to retain customers and increase profits; however, this topic has not been explored theoretically. Therefore, considering the new trends in utility firms that are active in renewable energy, where companies offer a combination of services and products to consumers [1,2,6–9], it appears necessary to focus on this topic.

It is well known by firms in the energy sector that their visibility and possible social activities can not only improve their competence in terms of consumer retention, but also assist customers in their path of transitioning toward prosumer status.

As an example of new social activities and value cocreation, we discuss the case of a PV company in the Swabia area in Germany, which provides customers with the opportunity to experience own-produced energy when dining in a restaurant, fed by the own-generated power utility of the restaurant. Additionally, this firm offers customers a free tour including visits to a number of houses where PV has been installed by the firm to provide these customers with the PV power generation experience. Customers can feel and experience own-generated power and discuss technical issues during the tour. Moreover, although company managers are aware of the reality that not every customer cares about technical issues and engineering details, the sense of empowerment that these customers gain from generating power stimulates them toward PV installation and participation in energy generation, which, in parallel, increases the position of the company in the market [24].

This ideology has also been considered by large companies, including E.ON, which, in its 2015 annual report, announced its goal of implementing new downstream business models for the cultivation of customer orientation for the development of new services and products to retain customers [18].

Many recent studies have targeted the business model development of firms in the renewable energy domain and smart grid firms, with surveys mentioning that the focus of firms on the delivery of energy as a tangible product causes them to decrease their position in the market [1,2]. However, in many cases, the literature lacks a clear interpretation of what exactly the new business model means for utility firms and how they can possibly modify their marketing strategy to improve their market position and customer retention level. Additionally, the internal marketing of firms and the impacts of market strategy on their internal structures, value chain, and network patterns are unexplored.

In the study of the business model development of utility firms, many authors underscore the importance of packaging new services to consumers to boost value creation, delivery, and value capture. Relational marketing during the period of relationship and ongoing encounters with consumers facilitates taking a clear picture of consumer demands and requirements, thereby leading to service tailoring and customization for consumers.

It is worth mentioning that in relational marketing, the consumer is encountered on a one-to-one basis and addressed according to his or her need to feel important, which thus allows him or her to reap any social benefits [22,23]. Based on some reports, and as a result of such personalized meetings and their close relationship to service providers, consumers expect to receive advice on the risks stemming from decisions, receive reports on the market forecast for better planning, increase service delivery firms' involvement level, etc.

Additionally, the improvement of the functioning of employees in the firms due to relational marketing has always been a high priority. Maintaining the relationship between the coproduction of value and the direct interaction with customers leads not only to more revenue from energy production and service offerings, but also to new structures, network patterns, practices, management rule development of energy devices, and knowledge creation [1,25].

The acknowledgment of the importance of relational marketing helps actors to organize face-to-face interactions through which they can offer energy expertise and consultation to customers. These one-to-one relations are evaluated highly by customers, encouraging them to respect the suggested patterns of consumption by the firm and to stay with the firm for future services and consultations. On the negative side, the absence of relational marketing can hamper marketing activities, such as the published report from Finland [10], where the inputs of the prosumers have been rejected by firms and the attempts at achieving the coproduction of the prosumers have been neglected. The report describes that customers are considered rivals to firms in an attempt to join the power market and sell their electricity products to the grid. Therefore, the development of presumption behavior and other green plans has been delayed in Finland.

For the boost in relation marketing in renewable energy, it is necessary to facilitate relational marketing activities through the new technological achievements of the energy sector. For instance, smart meters facilitate the tracking of the consumption/production patterns inside the one-to-one framework and ease the need for relationship marketing. In addition, through consumer interfaces, the coordination and integration of the different service plans will be facilitated.

Initiatives of Relationship Marketing in the Energy Sector

A Broad Market Index (BMI) value corresponds to the consumer retention policy and long-term relationship between consumers and firms. However, thus far, the activities of firms in the renewable energy sector have not been studied from the lens of relationship marketing.

As an example of a relationship marketing initiative, we discuss PV installation on the roofs of the buildings of small- and medium-sized consumers by utility firms that could largely impact consumer retention and relationship management. The results of relationship marketing in terms of its ability to boost the sales of services and products has been reported with special attention by [1,2], where by the time the PV units are installed on roofs and consumers are satisfied, they continue to purchase the excess demand from the firm, despite these services being offered at a higher price.

It is worth mentioning that naturally, a lower energy price has greater impacts on customer retention; for instance, the energy provider Greenchoice offered a rent-the-roof package in return for a stable and fixed tariff per kilowatt hour equal to the consumer price of gray electricity and, again, could satisfy both the consumer and firm in terms of the long-term plan of consumer management and relationship marketing [1,2].

In the other report published by [11], the long return and payoff time along the price of the PV panel installations have been pointed out as obstacles by respondents; however, provided that customers know the employees of the company, even if these employees offer a high price quote, customers are still willing to buy in the case of having a good reference for the firm and having made a contract [24].

The company Otovo also started a project in 2016 and quickly became the market leader in the sales of solar panels to Norwegian households by providing loans and with the

offer of required trainings [19]. Their offering of long-term loans, in addition to relationship marketing for the installation of PV units on roofs, could assist in customer segmentation and help them reach more customers; otherwise, they could not afford the costs related to the installment of distributed generation plants. Hence, in this way, firms could retain more customers and boost their market share.

3. Method

The realized stimulus of this study is the observation of the challenges of the businesses in terms of power utility. We are witnessing that new technology and related service offerings have modified business models in the power system domain, and several studies have reported the challenges and limitations faced by managers in the process of business model modification. It is recognized that the strength of market development lies in the proper marketing strategy. Hence, it seems necessary to develop appropriate and practical marketing strategies for utility firms based on the available marketing knowledge in the literature.

We support our proposal in the extension of traditional marketing theories with examples of real-life situations, empirically collected information from interviews with practitioners, and a summary of the multiple details published in papers to contribute to the generation of new knowledge in power firm governance and widen the domain of the application of marketing theories. Hence, the basis in the current study is second-hand information, which is gathered through real-world examples. We use this information to look at the energy market in a new way and testify to the existing theories.

The method in this study is chosen to provide an in-depth description and interpretation of the recent marketing theories in the renewable power generation domain (see Figure 1). The exploration of contemporary phenomena, where there is a lack of research in the field, is a common practice for research on the company strategies. The employment of observations and data has always been useful for achieving a holistic view of the complex structure of such strategies. Our descriptions are framed in the concepts of business models, relational marketing, and their complex components. It is believed that the comparison of the reality to these theories will provide us with a better understanding of the related background and circumstances to shed light on what is going on or what can be realized on this dark side of reality.

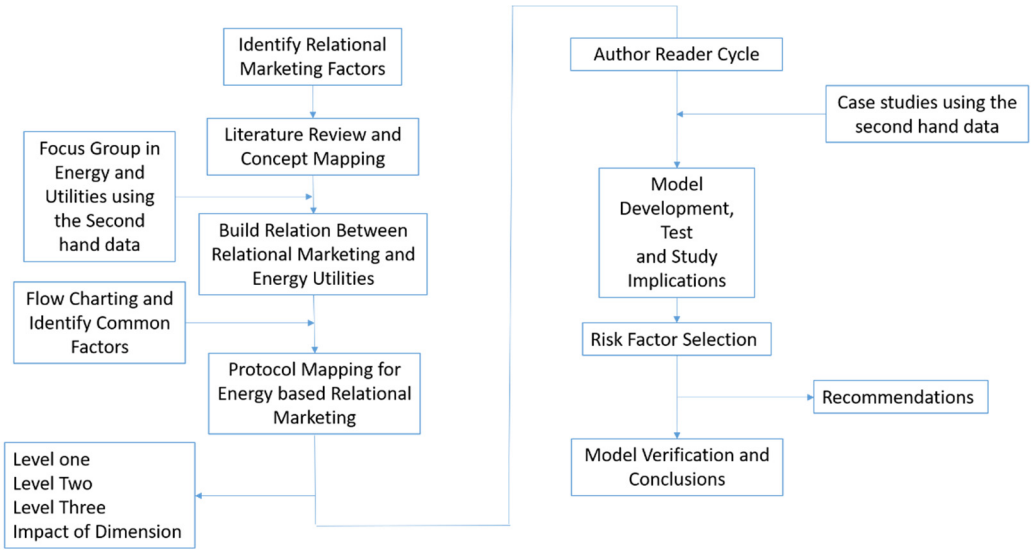

Figure 1. Proposed methodology.

Hence, in this paper, the authors have firstly identified the main factors in relational marketing from the literature, and using the focus group in energy, the authors attempted to create proper concept mapping. It helped the authors to build up a relation between

relational marketing and the energy utilities. Then, the authors identified the common factors and protocols. It has been done in three different levels with consideration of the impact of utility dimension. In the process of the authors' reader cycles, they have used the case studies as second-hand data. Upon the employed data, the authors have proposed the model mentioned Figure 2 and then tested the model using the available second-hand data. Consequently, the authors have identified the risk factors and then proposed verifications, recommendations, and conclusions.

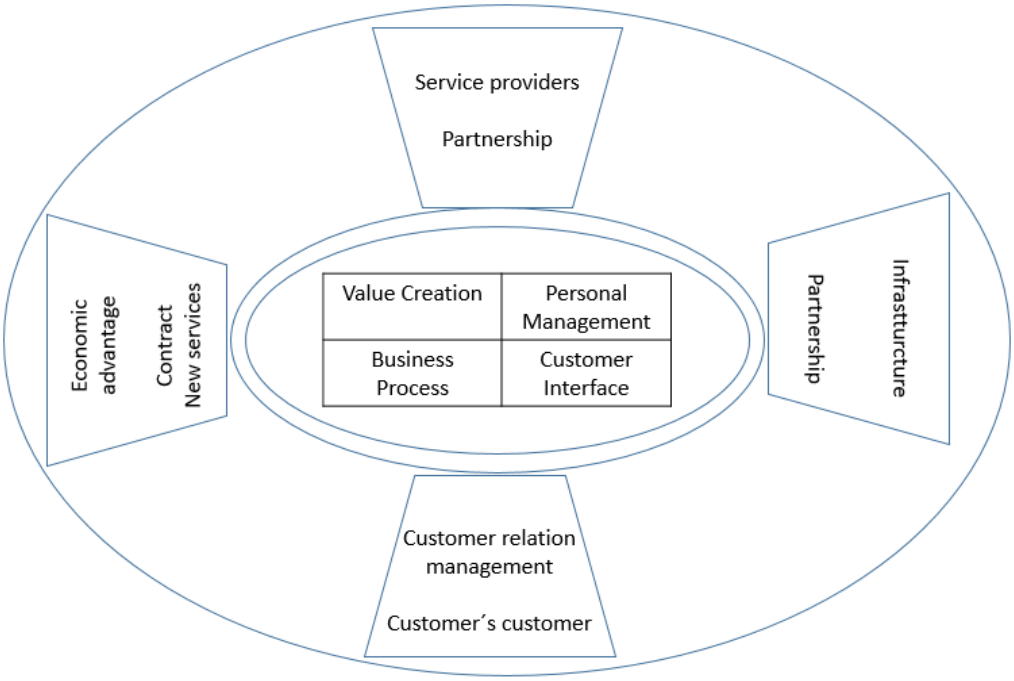

Figure 2. Recent pattern of firm networking for relational marketing.

4. Analytical Framework

4.1. What Are the Benefits to Consumers of Relational Marketing?

Consumers are normally interested in maintaining their relation with the same service provider. The motivation of consumers depends mainly on the complexity of the services, their trust, the personal importance of the services, the quality variability, and the impact of the energy services on their daily lives. Their ambition to receive high-quality services encourages consumers to not only remain loyal to service providers, but also seek loyal service providers and suppliers.

Trust Enhancement

Although customers are involved in renewable energy production plans due mostly to their concern about climate change and environmental issues, extant studies show that they do not trust utility firms for the advancement of the required changes alone and are willing to let the government take part in energy matters. Many consumers believe that firms are not honest in terms of green energy options. As indicated in [26,27], one main reason for the hesitation of customers is the lack of transparency of utility firms. Therefore, it is always vital that utility firms endeavor to develop value propositions to fulfill the increasing demand of customers to trust in relationship management activities.

It is worth mentioning that in the distributed electricity generation domain, in addition to packaging services for customers, utility firms are recommended to consider that the trust of the consumer in the service-based value proposition is even more important than that in the product-based value proposition since, in contrast to the feed-in tariffs of the traditional power supply for offering tangible products, most of the intangible offerings in the distributed power generation plants are difficult to evaluate before the

actual purchase and real experience. Indeed, the service offering of a firm, in many cases, remains difficult to evaluate and compare in terms of price and quality to those of a similar service package of competitor utility firms or services provided by technicians, even after they have been performed.

In other words, customers are mostly purchasing the services as a black box, where they have very little knowledge on the technical matters of the services and their consequences, in comparison to that of the provider, stemming from what is being performed. Hence, the customer is assumed to trust what the service provider is expressing before the contract, while, in the traditional scheme of the tangible good price-based offerings, the situation is not that complicated, and the level of ambiguity is not that high, which requires blind selling and a high level of trust.

Naturally, the customers of the specific service suppliers from the first purchase would feel vulnerable, especially that other customers of distributed power generation firms choose to purchase services for their trust in the goodwill of utility firms or their green image, which is considered a voluntary purchase. Hence, the former consumers face a more complicated situation since they decide before the contract, due to the lack of their technical knowledge from the black box of the provided services. Therefore, provided that utility firms can develop trust among customers of their service provision, customers will have good reasons to remain in the relations and not switch their service supplier based on their confidence in the utility firm and the associated reduced uncertainty.

The importance of trust is such that many companies prefer to stay local to enjoy their good reputation in the neighborhood. One company, Hartmann Energitechnik GmbH, believes that "distance adoption" would lead to customers knowing less about firms. Hence, the company's preference is to enjoy the local economic benefits in the region where they were born [24].

As another example, several interviewees in Trøndelag manifested that they would not have engaged in coproduction activities if they had not been approached by their local service provider to increase their trust in it [19].

Here, we note that utility firms should, in general, consider that mistrust and lack of competence and credibility are the very fabric of new lifestyles, and hence, customers are mostly, quite independent of the functioning of the firm, worried about the misrepresentation and exaggeration of the benefits and consequences of new offers. Therefore, companies should further assist in providing more information and establishing trust among consumers.

For instance, we mention a report published by [11], in which the main barriers to the development of solar energy in Finland are studied. Respondents mentioned the lack of information from electricity companies and authorities as an obstacle to the wide adoption of presumption in households. The wider the level of information is, either from technical issues or from inside the company, the higher the level of trust of the customer.

Additionally, in view of the importance of ecological issues for the customer, the previous relation and acquaintance of customers to the firm makes customers trust better and become assured that the green movement of the familiar firm is their internal motivation and not just the slogan that new entrants are using to profit from the new environmentally friendly laws of the government and its subsidies [24].

Hence, consumer trust can be considered one of the most effective tools of utility firms in positioning themselves upward in the competition in offering a mix of services and products to customers and detaining customers through high-quality customer relationship management.

4.2. Benefits of Relational Marketing for Utility Firms

The study of utility firms' functioning shows that consumers have decreased their number of product purchases from utility companies after being empowered to produce energy as prosumers [10,25]. Several reports show that prosumers are also more eager to make short-term contracts for energy purchases with firms, instead of traditional long-term

contracts, for the purchase of energy as a product. However, the new field of revenue for utility companies is service provision, which seems profitable. Indeed, there are growing demands for service provision in providing investment grants and consultations for the installation of distributed generation plants from utility firms. As mentioned above, such novel business models could be implemented successfully in different companies, such as Otovo in Norway [28].

However, investment grant services play paradoxical roles in revenue generation since they usually produce one-time income for firms and, in the long term, lower firms' revenue. Hence, firms need to develop new value propositions for their future growth. Therefore, the question becomes why firms deliver such services. The answer, according to [1,2], is that the paradox appears upon the cognitive barrier, where managers are still using the older measure of success in economies of scale and production cost per unit in their business.

Indeed, some firms consider distributed generation as a new technology that can be sold to produce revenue, rather than a type of organizational reform to craft new business models and renovate their marketing logic (and marketing behavior) for the new value proposition offering toward the sustainable advancement of their business [16,17].

Some researchers believe that when a firm strengthens networked activities through relational marketing, the network binds participants, who, hence, follow the evolution of the network [10]. Therefore, the firm modifies or changes its business model according to network evolution. Relational marketing impacts the business model of utility firms and their vision in the market. The mechanisms of dependency are implicit in their market prediction and evolve in time, ultimately leading them into the market.

Since the maintenance of installations, consultation and other service provisions are assumed to be ongoing or periodic in parallel with the traditional activities leading to the boost in firms' relationships with consumers, and the new high-valued emphasis on the importance of keeping the relations and new hearings from the network in the long term advance the firm in the market and allows it to plan according to market evolutions.

In addition, the intangibility of services empowers the competence of firms in the market in terms of offering novel services in a wider spectrum of price differences, which makes relational marketing more effective for utility firms in keeping and retaining their customers. Since the quality of the offered services always impacts relational marketing, the high expectation of return from relational marketing justifies firms' investment in the improvement of those services offered through organizational reforms.

4.2.1. Targeting the Right Customers

Business development involves the fixed and ongoing costs of investment to create an opportunity and attract, keep, and maintain consumers, as well as enhance the return on investment. In contrast, renewable energy development is costly in itself, and some managers believe that the return is low in the short term [1,2]. Therefore, firms should consider the right customers for their investment. Investment in the attraction of some customers is more prone to bringing about profit for firms than is the attraction of other customers. Some customers may be more interested in maintaining loyalty to the service provider, and likewise, a group of customers might be more interested in price incentives and feel better in dealing with competitive firms that offer more economical plans. Hence, utility firms need to seek the right target group with more potential loyalty for making investments and abiding by promises before they decide to develop a strategy for superior value creation, value delivery, and long-term investment plans in terms of value capture.

This situation puts into the prospect of utility firms the demand to study the causes, effects, and patterns of customer loyalty to determine what makes value for consumers considering the demographic factors of each region and their culture so that firms can know who these customers are to distinguish them from loyal/disloyal consumers.

Based on the findings, firms might investigate loyalty/defector-seeking factors (e.g., price, product, and service) to make up strategies for superior value creation plans that fit the requirements and wishes of loyalty-seeking consumers. The company, in this

regard, deeply considers that the benefits of mutual relations can be not only economic and environmental factors, but also higher values for the actors involved in value creation [10], and explores all the facets.

Moreover, relational marketing is not all-encompassing, and there are always convenience-based transactional consumers for whom firms should dedicate other kinds of specialized services. In sum, it is recommended that utility firms adopt a mixed product-service attitude toward the market and make proposals of value based on the different prospects of consumers to attract, maintain, and enhance target consumers through relational marketing while providing the other segment of consumers with different, more convenient, profitable, and cost-effective plans.

4.2.2. Boosting Service Offerings

In distributed energy production, energy is sold by the utility firm to the grid operator at a fixed price of kilowatt hours. Therefore, the relation between the grid operator and utility firm is mandated by the purchase agreement and is no longer a top-down relationship. Hence, the real customer, as the end user, has the option to switch suppliers based on his or her preference and willingness. Therefore, it is demanded that utility firms focus on marketing activities and gain market share by attracting more consumers and retaining existing consumers, which is why we are witnessing companies such as Southern Co., having planned since 2007 to move toward more customer-oriented activities, giving customers more control over how and when they use [their] services as prosumers [18].

In this way, and with the inclusion of customer relationship management plans in marketing, utility firms come to have a better understanding of customers' thoughts and expectations. Indeed, with the emergence of new players in the value chain of decentralized electricity generation and the increase in the share of distributed electricity generation in society, customer relationship management is becoming more complex, and customers' expectations and needs are becoming more diversified. To adequately address the above-mentioned issues, the role of a continuous relationship with the customer is more prominent than it is in traditional schemes. Many utility firms consider the environmental concerns of end users as a decisive factor of their purchase decision and hence try to obtain a green image of their energy production activities inside their relational marketing campaign.

5. Discussion on Influencing Factors for Relational Marketing

The comparison of case studies to marketing theory has revealed that both utility firms and customers can benefit from relational marketing with the enhancement of mutual trust, with firms targeting the right customers and boosting their service offerings. This consideration raises the question of how one can estimate the importance of relational marketing to the firm, the influencing factors of relational marketing according to firm structure, how relational marketing can be realized in practice, and finally, the roadmap for managers. Relating the results of this paper with the literature could reveal some answers to the above questions.

5.1. Relational Marketing Can Be Realized on Different Levels

The relational marketing of utility firms can be provided at different levels upon an appropriate consumer segmentation strategy. Each level of relationship engagement leads to the distinct potential for firms to obtain competitive advantages.

5.1.1. Level One: Price-Incentive-Based Relational Marketing

An instance of price-incentive-based relational marketing is PV installation on the roofs of consumers. The reality is that the price incentive can be easily imitated with competitor firms inside the proper marketing package, and hence, the influence of this level of relational marketing is low. In contrast, consumers attracted by this level of marketing are highly vulnerable to competitors' offers and promotions, and hence, firms' offerings should be considered in terms of the appropriate segmentation of consumers based on their loyalty

level, as discussed above. Therefore, utility firms willing to maintain consumer loyalty and customer retention should seek to move beyond this level of relational marketing.

5.1.2. Level Two: Social Relational Marketing

This level of relational marketing emphasizes social bonds, although they can be mixed with price incentives.

According to the results of interviews in [1,2], with the increase in competition in the market and its volatility, in addition to consumers' willingness to switch supplies, the high value gained from the green image of the firm, their political or environmental goodwill, their vision of climate change or the security of supply in case of failure or (cyber)attacks, as well as service quality and consumer management, should all be considered. For instance, some utility firms in Germany offer a so-called "eco power" tariff to consumers and have the chance to capture more value from renewable energy production, assuring consumers that they will invest additional revenue in the expansion of renewable energy production projects [29,30]. In the survey conducted in [31,32], many respondents show that they may use green technology, even if the price is higher than that of other types of energy, for the sake of climate protection.

At such a point, consumers consider firms in terms of customer management and environmental protection duties; hence, renewable power generation is just a device for the switching behavior avoidance of existing consumers and their retention, increasing their numbers by offering customers green value propositions.

Political goodwill for consumer relation management is important mostly for firms with public shareholders; it satisfies public expectations, and therefore, when politicians are on the supervisory board of firms, their support of renewable initiatives is beneficial since, on the one hand, it assists them in keeping their seats in the next election, and on the other hand, it supports the expansion of renewables in the region.

The social bonds of utility firms can agitate consumers' loyalty and motivate customers to stay with firms when the difference between such firms and competitor firms is not so strong.

5.1.3. Level Three: Structural Relational Marketing

When a utility firm can provide a consumer with superior value or services that he or she cannot attain or can hardly or more expensively take from other sources, consumer loyalty increases. When the marketer adds social bonds and/or the price incentive factor, the competitor finds it more cumbersome to attract consumers. The structural problem-solving skills of the firm bond the consumer to the firm for future purchases.

As utility firms are advancing in crafting new services and products, it is recommended that they remember that consumers are normally not interested in disruptive technologies where the main target is not the current demand at the given circumstance. Additionally, these firms cannot see the potential of a totally new product until it comes to the market. In keeping consumers interested in these new services, the situation becomes even more difficult since it is said that the consumers are not satisfied with new services until they understand the real benefit of them. Therefore, during their efforts toward introducing new offers to consumers, firms either need to solve the problem better and more efficiently than their competitors can, or need to create new demands according to the trust they receive from consumers in earlier communications and relations.

5.2. How Does the Dimension of the Utility Firm Impact Relational Marketing?

The level of relational marketing of utility firms depends on the size and dimension of customers and demands, according to which they accommodate the value proposition for customers. The reason for this is, first, that energy is generated near the point of consumption and, second, that the energy generation system is tailored to consumer demand. Therefore, utility firms aim to achieve vertical integration and size modification only when doing so is profitable and brings about an economic advantage for firms.

Considering that there are various products and services to be offered to consumers, including hardware sales, the installation of hardware, distributed generation consultations, financing, etc., some managers of utility firms believe that such services are out of their core competence for such a small investment volume and that the resulting advantages cannot cover the related costs. This thought process gives rise to a collaboration and partnership between firms in terms of forming a joint venture with independent business developers much more quickly rather than increasing the enrichment of their internal know-how and experience for the portfolio. For instance, compared to traditional utility firms on their own, local technicians can better perform installation services and private banks, and financial institutes can better offer investment grants and financing services.

The type of cooperation can vary, which might take place at the different levels of utility firms and with suppliers. In this regard, we mention the cooperation of utility firms E.ON and RWE with manufacturers Siemens and REpower. However, naturally, the framework of agreement with the supplier is mostly dedicated to large utility firms. The interested reader is referred to [33] (Section 4.2.2) for more details on the collaboration schemes. The scheme in the relation of prosumers and companies can also be different in the case of small, medium-sized or large companies, national or international companies, etc., as is shown by a study in Finland.

However, some utility firms believe that since such projects are out of the core competence of firms and the profit is not sufficient, there is no need to become active in this new field and expand their activities. Indeed, this may be a paradoxical issue that puts these firms in danger of missing their position through losing the chance of future development by not building the core competence and the possible lack of their competitiveness in the evolving market of the future. This lack of competence would emerge from their inability to pass the cognitive barrier for resource allocation inside the marketing campaign, the core competence exploration of personnel, or their lack of ability to take the fast-track scheme of revenue generation.

Big Is Not Always Best

The nature of the individual firm is indeed the prominent factor in the decision to increase (or not) the partnership or expansion of core competence and build the core competence or vertical integration. The assumed benefits of the initial investment and network extension depend on the real performance of the firm in using the extended value chain and advancing in the market.

Indeed, although some scholars believe that the local activities of firms in the energy sector can be considered as having limited growth potential, conversely, others, such as EnBW, believe that in the medium term, local activities harbor enormous potential [18]. We are witnessing that there are some small firms with limited generation capacity, know-how, and experience who prefer to limit their market share and avoid partnership plans to enlarge their capacities to engage in larger projects. For example, Juwi, a project developer in the field of wind, solar, and biomass, takes part in a cooperation with utility firms through a joint venture to boost its capacity to handle renewable energy projects (see [1,2,26] for more details). In this stream, the utility firm can develop a higher-level portfolio of energy production through its capacity and experience, while project development duties are being carried out by Juwi, with each side taking 50% of the share in this cooperation.

Conversely, when the power company is a geographic monopoly or even state-controlled, like the cases of the power grids State Grid Corporation China (SGCC) and China Southern Power Grid Co. Ltd. (CSG) in China, the privatization of the energy sector and the linkage to the new market players of energy service companies, information, and communications technology (ICT) service providers, and other strategic partners, remain weak.

According to reports [16], after the electricity market reforms in 2002, the smart grid initiatives of China have been governed by two firms, the SGCC and CSG, in a vertically integrated scheme, with these two firms owning a combined 90% of China's grid assets and

controlling the transmission, distribution, and retailing of electricity in different regions of the country. According to reports, the lack of participation of the private sector and the mutual active relation of companies and customers has led to the demand-side response programs becoming insufficient. For instance, although smart meter installation could achieve an 80% success rate in China, customers have remained passive in terms of agreeing to such an installation. Indeed, the reports emphasize that the monopoly structure and size of the companies have limited the active interaction between customers and firms, hindering the promotion of energy saving plans from being fruitful.

6. Implications

Utility firms have evolved to be interrelated with resource providers, partners, personnel, consumers, and suppliers for service and product provision. Due to the change in the business model from sheer energy selling to service providing, the firm cannot independently trace its future trajectory in the market. The position of the firm in the market is a function of its relation to other firms and actors, in addition to its internal relations with personnel and their competencies. This dependency of the firm position on different actors highlights the importance of relation management for the advancement of the firm in the market.

The benefits of good relation management schemes also impact contract establishment and the pattern in acknowledging (or not) the firm activities by customers, which can lead to good practices and procedures for the cocreation of value and advancement in the market. However, all the relations are bilateral or multilateral, and hence, not only do the decisions in the firm and management strategy impact other actors, but other actors' functioning, either internal or external of the firm through the alliances, competitors, main customers, agencies, suppliers and service providers, also impact firm status and position in the market.

Hence, it is necessary to quantify and evaluate the network parameters for the best forecast of future changes. Although sounding in the network requires time and is always costly, and hence, most firms rely on common practices in their activities in the market for revenue generation, as stated in [16], the traditional planning style does not apply to the new market structure of the modern energy market, and managers need to envision their position in the market using optimal time management and resource allocation strategies for the best utilization of market opportunity windows.

Although most of the literature discusses novel business models, firms need to support the learning capacities of the firm with new organizational structures and market models for survival. In the first step, such support means the enlargement of the relations between firms and involved actors that lead them to become sensitive to consumers' changes and modifications in common practices, according to the information gained from the network of actors, and learn from the new knowledge and experiences gathered from interactions. However, this situation is bounded by the relation and knowledge management capacity of the firm.

As the knowledge of the firm increases, it becomes easier for it to attract competent partners and actors either externally or as competence personnel for the better functioning of firms' activities (internally).

All the abovementioned points refer to the managerial activities of utility firms as a package of history, experience, and punctual situations. Although it is difficult to present a fixed list of managerial recommendations, this consideration emphasizes that every decision and change should be evaluated in the context of and relation to other actors in the value chain through common managerial wisdom, as well as the contextual understanding and prediction of market trajectories and trends.

Although there are no specific rules for the management of utility firms to support the evolution from the traditional market structure to the modern energy market, more guidelines can be deduced on the basis of research and the study of theories. The next step

is a practical trial of the guidelines to see how they can be beneficial for the advancement of sustainable energy development [32].

7. Results of Relational Marketing and Some Recommendations

New value propositions for the consumer side should be developed to offer a mixture of products and services. In addition, utility firms should take a proactive approach to first convince consumers of their demand for new tangible and intangible offerings, make use of the trust of existing consumers on the front line, and then increase the number of loyal customers. To achieve these goals, firms need to strengthen their competitiveness and capability in internal marketing and core competence in technology development and personal management, in addition to their external marketing promotions. By doing so, firms can compete with established technologies and generate revenue by treating the disruptive and innovative technologies of the distributed generation as the gateway to the service market and prospect the S-D-dominant logic of marketing in their activities. This view of the new field of business in distributed generation compensates for the decrease in the sales of tangible products and investment costs when they consider the strategic options of S-D-dominant logic-based business models, which could prove their efficiency in the other disruptive technologies of IT, health care, etc. Advancement beyond the traditional culture of the electricity delivery of utility firms could open up new opportunities for growth and expansion to attract a greater number of consumers, as is done today in similar high-tech industries [15].

7.1. Improvement of Internal Marketing in Utility Firms

In recent works on the marketing of renewable energies, the commodity is considered a mixture of products and services for consumers. Since the outlet of the service is supposed to be a performance that depends on the quality of the job functioning of employees and personnel, in addition to external marketing, the firm should also account for internal marketing in such a way that it becomes able to attract and maintain consumers while retaining employees for the promotion of the mix of product-service delivery for value capture in the market. Indeed, when consumer satisfaction with the delivered services increases, the likelihood of product purchase also increases.

In some literature, the importance of employee retention is prioritized over that of consumer retention since inefficient performance or dully duty running negatively impact service quality and consumer satisfaction, and thereby hamper the profitability of the firm and reduce the resources available to the firm for further investment in internal and/or external marketing. Therefore, for the real implementation of relational marketing practice, firms need to plan for appropriate employee selection and loyalty retention, as they do for consumer retention.

Hence, the relational marketing context includes the different internal partnerships between the personnel and external partnerships with different identities toward the success of firms in the marketplace, resulting in different forms of horizontal and vertical partnership and networking inside the utility firm, where the whole structure is competing with other such networks of structures. The actors in the relationship include consumers, employees, investors, suppliers, distributors, data and consumer interface companies, governmental agencies, R&D centers, and universities. In this prospect, the establishment of business networks and relationships is essential for the success of utility firms.

7.2. Relationship Management of Utility Firms

In smart grids, the traditional market structure has evolved into a network of different actors and involved firms, research institutes, and agencies. As a result, some utility firms have started to outsource their marketing activities, mainly to data computation firms and consumer relation companies, and have kept with their main core competence activities. The level of this partnership, in many cases, determines the position of these firms for strategic market development toward keeping their share of the market. Such

externalization has been reported in different surveys and studies and has made the structure of companies hierarchically interweaved with different data and energy suppliers, making the supply chain network more complex than before [6–9].

The diminishing effectiveness of the regulative barriers in the market has made firms more efficient in terms of survival since, on the one hand, customers have more options for receiving supply and related services and seeking the most efficient delivery policy, considering the addition of energy production options on their own (being prosumers) and acquiring demand from the neighborhood through the customer-side market at the competitive price. However, this does not mean that we neglect that utility companies already have a long history in quality management and are, therefore, inside the streamline of the supply network, with access to the different actors that provide installation and maintenance services, etc., from their core competence.

On the other hand, the relationship between the marketer and end user manifests itself through internet access in smart grids, which, through the globalization of competition in smart grids, has made customer management more complex for utility firms, and the amount of exchanged data for access to end users calls for more efficient customer loyalty programs with the employment of databases of customer behavior patterns. Although the internet has facilitated data sharing and distributor partnership for utility firms, it is not easily available to consumer-side actors in the market. This situation leads to the merging and growth of virtual firms to obtain consumer-side external activities and mainstream the supply and plan for value creation, new offers, consumer behavior analysis, etc., through integration and partnership.

The tripartite partnership among service providers, utility firms, and data companies for customer management is mostly vertical. However, utility firms should consider horizontal relationships and alliances with companies as alternatives due to the high cost of investment in smart grids independently. When renewable energy firms are evolving to become more knowledge-intensive than traditional firms, novel platforms are required to handle and boost such development, which puts pressure on the development of capacities and resource use such that these firms might seek strategic alliances with competitors in some specific fields, products, and service provisions where they have common interests and goals and where competencies are complementary and compatible. Such an alliance of competitors would facilitate the formation of coalitions in setting industry standards on the frontiers or competing toward regional coalitions to increase their presence in different markets [3,4].

In the process of the extension of relations, firms need to be partners horizontally with the noncommercial actors of universities, research centers, and governmental agencies either to set and test the standards through R&D activities or enforce the standards and set regulations, for instance, in environmental protection for commercial actors and industries or for activities toward balancing the market and creating incentives [8,9].

As a result of the abovementioned relations, utility firms cannot remain independent for reasons beyond their demand for access to the database and organizational interfaces for customer management. Hence, learning through the relations becomes an important part of the internal activities of firms to obtain better interpersonal relations and advancement. This topic provides a setting in which to discuss what the new era of network-based smart grids expects from the management of utility firms to conduct business activities and what the good practices of the future are.

7.3. Better Customer Management by Relational Marketing

After tracing the relational marketing of utility firms and relation management to the other actors playing a role in marketing activities, we study the management of customer relations according to the available interfaces and market structure. Understanding the customer management structure is the preliminary stage of the successful management of work procedures in firms. Hence, we list some of the capacities expected of the managers of utility firms.

Envisioning of the S-D provision in the networked interaction of different actors: Managers need to develop a realistic vision toward the new market trends to develop the skills and competence of their firms for continuous value creation and revenue generation in the market. The survey of interviews with managers in [26] reveal that they consider keeping the same view of the market and the business model for the future of the firm, while confirming that revenue has begun to decrease. The modification of their vision to the market transforms their activities toward the development of the essential capacities to seize market opportunities, which the traditional internal and external configuration and strategy do not allow firms to perceive. There are many recent studies on the new trends in market movements and evolution and their consequences; however, scant works have targeted the new S-D logic of the energy market [6–9]. The S-D logic of marketing turns the capacities and planning of the firm systematically to the relevant planning to create, deliver, and capture value according to the activities of different actors and the information gathered in the closed-loop feedback of consumers for a better provision of energy supply and services. For a review of the potential of digital data streams and information utilization, the interested reader is referred to [20,21].

Relation management in the network: This capacity includes all the management activities needed to coordinate the relation of different actors in the value chain for value creation from tangible/intangible resources, and then proceeds to the market for value delivery and revenue creation [8,9]. Moreover, this capacity is required to manage and synchronize all the actors in the service and product creation networks, R&D activities, external partners and links to the government and other noncommercial identities, customer interfaces, and data management centers. Scarce works have been carried out on the network management of the renewable energy market, and are manifested mainly in the literature on business model development. By stressing relation management, managers are guided in forming strategic alliances and partnerships with service providers and/or the competence allies for the establishment and maintenance of their position in the market. Figure 2 shows the recent networking pattern of utility firms for relational marketing. The factors leading to the shape of this pattern are motivated by not only the high cost of investment, but also the short-term contracts to utility firms and the changes in attitude toward long-term relations with consumers, originating from the evolution in the role of consumers to prosumers, which underlines the importance of fostering the relational marketing of utility firms for their survival in the market of new and incumbent players.

Study on the cause and effect of interorganizational activities: Managers of renewable energy firms, in addition to studying the external causes and effects for the management of their customer relations, need to discover the skills and qualifications that the personnel of the firm need to master to conquer the market. A study of the literature shows that in addition to the availability and prices of tangible resources for firms, the basic capacities for network-based orientation in the management of human resources and the service-logic-based integration of tangible resources with intangible resources considering the interorganizational communications and interunit coordination of capacities, in addition to the culture of learning from experiences and available information, are essential for the survival and development of utility firms.

8. Conclusions

In the era of the development of renewable energy resources, there have been many speculations as to the return of investment on the utility side, and managers are looking for business models and market strategies to boost their firms' revenue. It is believed that all the market offerings (in the spectrum of pure service to the tangible good) are to deliver service to the customer for value creation and revenue generation. Hence, in this study, we take the idea of relational marketing of service firms and apply it to utility firms. The benefits of relational marketing for both consumers and firms have been discussed in the comparative study of the role players in the sector. It is worth mentioning that the wide application of the internet for bilateral communications in renewable energy

systems and smart grids makes relational marketing more powerful and efficient. However, further interest in the practice and research of the marketing of renewable energies make recent technologies more useful and can thus assist in their development. Such interest includes a focus on the recognition of different levels of relationship marketing in utility firms, practicing marketing theories, and focusing on the service characteristics that might incentivize or weaken consumers in terms of their attitudes toward the energy market.

9. Limitations and Remarks Concerning Future Works

The limitation of the present work is that we have employed the second-hand data of utility firms, while relational marketing can be a source of competence for the supply chain management improvement and revenue generation of firms in the diverse specialties and contexts of smart grids. The business model and investment factors of the companies at different local and international scales have been investigated in the literature, for instance, in [17,24], etc., and the results of the present manuscript can be bundled to the first-hand data according to the real feedback of firms for an in-depth study to obtain practical implications and insights.

Additionally, there are some open theoretical questions on this topic of research. For example, it is necessary to study when firms rely on internal and external relations and how energy firms are impacted by the level of dependence on the network. While their network helps in reducing uncertainties, firms also start to depend on the network of firms. This topic is in the domain of network dependency challenges in the energy sector. The dependency inside the network is business to business or business to customer in the context of relational marketing.

Other theories, such as learning theory, transaction costs, economics, networks, and alliances, can be applied, which could lead to different results and provide complementary guidelines for utility firms.

Author Contributions: E.N.S.: Conceptualization, methodology, investigation, resources, writing—original draft preparation, R.F.: conceptualization, resources, writing—review and editing, and funding. All authors have read and agreed to the published version of the manuscript.

Funding: The research leading to these results was supported in part by: (i) the Grant PID2020-116270RB-I00 funded by MCIN/AEI/10.13039/501100011033; (ii) the Grant PDC2021-121578-I00 funded by MCIN/AEI/10.13039/501100011033 and by the "European Union NextGenerationEU/PRTR"; (iii) the Grant TED2021-132710B-I00 funded by MCIN/AEI/10.13039/501100011033 and by the "European Union NextGenerationEU/PRTR"; and (iv) CSIC under Grant 202350E072, Proyecto Intramural IAMC-ROBI-II (Inteligencia Artificial y Mecatrónica Cognitiva para la Manipulación Robótica Bimanual—2º Fase).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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