



Extracting a Model of Shared Value Creation Based on Electronic Services (Case Study: Semnan Province Electricity Distribution Company)

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Abstract

Government agencies are investing in the electronic delivery of services within their internal administrative processes. Organizations are increasingly using shared value creation approaches and involving various types of stakeholders in these transformative processes to enhance service quality and create public value. Accordingly, the present study aims to identify the indicators of a shared value creation model based on electronic services in Semnan Province Electricity Distribution Company. In terms of purpose, this research is applied-developmental. First, by studying and reviewing previous models of shared value creation based on electronic services and conducting interviews with experts, 144 attributes were extracted within 25 categories. Then, the Delphi process was conducted in four rounds, and consensus was achieved after the fourth round. In this study, after reviewing the theoretical literature of the research, examining existing models, and applying the Delphi method, 98 attributes within 25 main categories were identified for the model of indicators affecting shared value creation based on electronic services. The findings of the study presented a comprehensive model for shared value creation based on electronic services in Semnan Province Electricity Distribution Company, which can be used by managers and researchers in this field.

Keywords: value creation, electronic services, Semnan Province Electricity Distribution Company, Delphi.

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1. Introduction

In recent years, digital transformation has become one of the central concerns of public-sector and utility-service organizations, particularly because citizens and service users increasingly expect public services to be accessible, transparent, responsive, secure, and capable of generating tangible value in everyday life. In this context, electronic services are no longer limited to the automation of administrative procedures; rather, they have become strategic mechanisms through which organizations redesign service delivery, restructure stakeholder relationships, and develop new forms of interaction with users. For public utilities such as electricity distribution companies, the shift toward electronic services is particularly important because

these organizations operate at the intersection of essential service provision, public accountability, economic efficiency, environmental responsibility, and customer satisfaction. Electricity distribution companies are expected not only to ensure reliable energy supply but also to manage growing demand, respond to service requests, reduce unnecessary in-person visits, improve billing and payment processes, provide accurate consumption information, and strengthen trust in digital communication channels. Therefore, the development of electronic services in this sector should be understood not merely as a technical modernization process but as a managerial and strategic pathway for shared value creation.

The concept of shared value creation is rooted in the idea that value is not produced solely by organizations and then



transferred to passive customers; instead, value emerges through interactive processes among organizations, customers, users, employees, partners, technologies, and broader institutional actors. Contemporary service research increasingly emphasizes that value is co-created through use, interaction, experience, participation, and mutual learning. This perspective is especially relevant in digital service ecosystems, where platforms, applications, artificial intelligence tools, multichannel technologies, and data-driven systems enable customers and organizations to participate jointly in service configuration, service improvement, and decision-making. Saha et al. conceptualize value co-creation as a broad metatheoretical framework that integrates multiple levels of interaction and highlights the interdependence of actors, resources, practices, and outcomes in the creation of value [1]. Similarly, You argues that management can be approached as a design practice through which organizations intentionally create mechanisms that support value co-creation across multiple cases and organizational settings [2]. From this standpoint, value creation in electronic services depends on the deliberate design of organizational processes, technological interfaces, customer participation channels, and feedback mechanisms.

Digital technologies have significantly expanded the possibilities of shared value creation by enabling organizations to establish continuous, data-rich, and interactive relationships with users. Electronic services allow customers to access information, track requests, make payments, submit feedback, manage consumption, and communicate with service providers without physical presence. In such settings, the customer is no longer merely a recipient of services but becomes an active participant in service experience and service improvement. Tuunanen et al. identify micro-level mechanisms that support value co-creation in the design of digital services and show that digital service design requires attention to actor engagement, resource integration, interaction structures, and user practices [3]. Dineva also emphasizes that digital content provides opportunities for user co-creation by enabling customers to participate in producing, interpreting, and circulating value through digital engagement [4]. These insights are highly relevant to electricity distribution companies because electronic service quality depends on the extent to which subscribers can understand, use, trust, and contribute to digital service processes.

A key feature of value creation in electronic services is the multiplicity of value dimensions. Value may be

functional, such as ease of use, service speed, accuracy, availability, cost-effectiveness, and process efficiency. It may also be emotional, such as trust, security, confidence, perceived control, satisfaction, and reduced anxiety when dealing with service systems. In addition, value may be social and public, including environmental benefits, reduced paper consumption, reduced transportation-related fuel consumption, greater transparency, and improved public welfare. The literature shows that digital service systems create value when they align technological capabilities with user expectations, organizational competencies, and broader social outcomes. Tran et al., in their analysis of value co-creation in branded mobile applications, show that digital interaction environments can influence customer outcomes by shaping engagement, experience, and behavioral intentions [5]. Wang and Yang also demonstrate that value co-creation practices strengthen brand loyalty through affective commitment and psychological brand ownership in brand communities [6]. Although these studies focus on marketing and digital brand contexts, their implications are transferable to public utility services, where subscriber loyalty, continued use of electronic services, trust in the provider, and positive word of mouth are important outcomes of digital transformation.

The movement from traditional service delivery to electronic service delivery also requires organizations to reconsider the role of technology infrastructure and multichannel service systems. In many service industries, customers do not interact with organizations through a single channel; rather, they use websites, mobile applications, call centers, automated voice menus, messaging systems, social media, and face-to-face services simultaneously or sequentially. Therefore, multichannel service integration becomes a crucial component of shared value creation. Maleki Minbash Razgah et al. emphasize the importance of prioritizing multichannel technologies in creating co-created value, indicating that technology selection and channel configuration can determine the quality and effectiveness of customer participation [7]. In electricity distribution services, this issue is especially important because subscribers may differ in age, digital literacy, service needs, geographic access, and preference for traditional or digital service channels. Hence, designing electronic services for this sector requires attention to inclusiveness, usability, accessibility, and the coexistence of digital and traditional channels.

Artificial intelligence and intelligent digital tools have also opened new horizons for value creation in service

ecosystems. AI-based tools can support personalization, automated response, predictive service management, customer support, data analysis, and faster decision-making. Manser Payne et al. propose a digital servitization value co-creation framework for AI services in financial service ecosystems and emphasize that AI-based services require the integration of technological capability, ecosystem actors, and customer experience [8]. Jalali Filshour et al. similarly present a value co-creation model in banking and insurance with an emphasis on artificial intelligence tools, indicating that AI can strengthen service personalization, trust, responsiveness, and stakeholder interaction when it is embedded in a coherent service model [9]. Although the electricity distribution industry differs from banking and insurance, AI-enabled service tools may support subscribers in tracking consumption, understanding bills, reporting outages, receiving alerts, and interacting with service systems. However, these opportunities also require attention to data security, privacy, user trust, and organizational readiness.

Digital leadership and innovation capabilities represent another important foundation for shared value creation. The implementation of electronic services is not simply a technical matter; it requires leadership commitment, strategic alignment, cultural readiness, employee competence, and the ability to innovate in both exploratory and exploitative ways. Cai et al. show that digital leadership can influence competitive advantage through ambidextrous innovation and value co-creation, suggesting that leadership plays a critical role in converting digital resources into organizational and stakeholder value [10]. For electricity distribution companies, this means that managers must not only invest in software, infrastructure, and digital channels but also develop organizational flexibility, support learning, reduce resistance to change, allocate resources, and create a culture in which employees believe in shared value creation. Without such managerial and cultural foundations, electronic services may remain fragmented, underused, or disconnected from subscribers' real needs.

The significance of shared value creation becomes even clearer when considered within public-service and essential-service contexts. Unlike purely commercial firms, public utility organizations must balance efficiency, financial sustainability, service quality, social responsibility, and public legitimacy. Schiavone et al. examine digital business models and value co-creation in healthcare from a multi-stakeholder ecosystem perspective and show that digital transformation in service sectors requires coordination

among multiple actors, institutional arrangements, and user needs [11]. Radpour et al. similarly present a dynamic process model showing that value co-creation affects the effectiveness of digital health platforms, emphasizing the importance of interaction, participation, and platform responsiveness in service effectiveness [12]. These findings are relevant for electricity distribution because electricity services also involve a multi-stakeholder ecosystem, including subscribers, managers, employees, contractors, regulators, technology providers, governmental bodies, and society at large. Therefore, shared value creation in this industry should be examined as a systemic and dynamic process rather than as a set of isolated service improvements.

Service design provides a practical lens for understanding how organizations can translate value co-creation principles into operational models. Service design emphasizes the systematic identification of user needs, the mapping of service journeys, the improvement of touchpoints, and the validation of customer value through iterative feedback. Turunen highlights the role of service design in co-creating and validating customer value in higher education IT services, showing that digital service improvement depends on user participation and continuous evaluation of value propositions [13]. Similarly, Stegmann et al., in their scoping review of the digital transformation of value co-creation in sport marketing, show that digitalization changes the nature of stakeholder engagement and requires new research agendas for understanding value creation across digital environments [14]. These perspectives indicate that electronic service development should not be reduced to the deployment of applications or portals; instead, it should involve continuous diagnosis, feedback collection, user-centered design, and the adjustment of services according to user experience and organizational goals.

In the electricity distribution industry, shared value creation based on electronic services can be linked to several practical domains. First, electronic services can improve subscribers' welfare and satisfaction by facilitating access to services, reducing physical visits, saving time and cost, and improving the traceability of requests. Second, they can contribute to financial and economic improvement by reducing administrative costs, increasing service efficiency, supporting economic productivity, and reducing subscriber churn. Third, they can strengthen the organization's position by increasing awareness of subscribers, creating positive behavioral intentions, and enabling market-oriented service development. Fourth, electronic services can improve perceived security when subscribers feel safe in bill

payment, financial transactions, and account access. Fifth, they can foster citizenship behavior and loyalty through repeated use, responsible behavior, participation in surveys, and positive word of mouth. These dimensions show that shared value creation in electricity distribution is multidimensional and must include both customer-oriented and organization-oriented indicators.

At the same time, the realization of shared value creation in this context faces several barriers. Traditional organizational structures, legal gaps, cumbersome regulations, high infrastructure costs, resistance to change, lack of resource allocation, insufficient managerial knowledge, and weaknesses in data security can reduce the effectiveness of electronic service initiatives. Moreover, subscribers may differ in their digital literacy, age, values, expectations, preference for traditional services, and willingness to participate in digital service processes. These issues indicate that electronic service development must be grounded in a realistic understanding of organizational and environmental conditions. The model required for Semnan Province Electricity Distribution Company should therefore account for technological infrastructure, managerial barriers, customer characteristics, industry complexity, service development capability, organizational flexibility, and the social and economic pressures affecting the company.

Despite the growing body of literature on value co-creation in digital platforms, mobile applications, financial services, health services, higher education IT services, sport marketing, digital content, and AI-enabled service ecosystems, relatively limited attention has been devoted to shared value creation based on electronic services in electricity distribution companies. Existing studies provide valuable theoretical and sectoral insights, but the electricity distribution industry has distinctive features, including public-service obligations, critical infrastructure responsibilities, peak-load challenges, regulatory constraints, subscriber diversity, and the necessity of maintaining trust in essential service provision. Therefore, there is a need for a context-specific and indigenous model that can identify the indicators of shared value creation based on electronic services in this sector. Such a model can help managers understand which factors should be strengthened, which barriers should be managed, and which dimensions of value should be emphasized in designing and implementing electronic services.

Accordingly, the aim of the present study is to identify and extract the indicators of a shared value creation model

based on electronic services in Semnan Province Electricity Distribution Company.

2. Methodology

In terms of purpose, the present study is “developmental-applied,” and in terms of method, it is classified as qualitative research. Moreover, from the perspective of data collection, this study is considered “descriptive-non-experimental” research. The procedure of this study was based on two steps. In the first step, a literature review was conducted to identify existing articles and models in the field of shared value creation based on electronic services, and interviews were conducted with experts to identify codes that had been overlooked in the research literature. In the second step, the Delphi process was carried out in four rounds, consensus was achieved after the fourth round, and finally, the final conceptual model of the study was extracted.

The data collection tools in the present study included “library studies” through the review of books, journals, theses, reports, websites, databases, and other available documents in specialized libraries, as well as interviews with research experts for identifying the indicators of the research model, and questionnaires for extracting the model through the Delphi method in each Delphi round.

To control the quality of the Delphi method and enhance validity, participants were selected who had expertise in the field of shared value creation and electronic services and who had sufficient motivation and willingness to participate. In addition, multiple rounds of questionnaire administration were used. To maintain reliability, respondents with relevant expertise were used, the responses obtained from each Delphi round were fed back to the respondents, and finally, an attempt was made to establish a level of consensus.

3. Findings and Results

The purpose of the present study was to identify the field of shared value creation and electronic services for Semnan Province Electricity Distribution Company. After reviewing the literature, conducting interviews with experts, and identifying the components of the shared value creation model based on electronic services, the first-round Delphi questionnaire was distributed among experts of Semnan Province Electricity Distribution Company, and 20 completed questionnaires were returned. In the first-round Delphi questionnaire, the experts were asked to assign a score to each of the identified components based on a seven-

point Likert scale, considering the condition of the electricity distribution industry in Iran. After collecting the experts' opinions, the mean score of their views regarding each subdimension was calculated.

After collecting the experts' opinions in the first round and calculating the mean of their views, the second-round questionnaire, along with the results of the first round, was provided to the experts. At this stage, the experts revised and adjusted their opinions according to the results obtained from the first round. Then, the degree of consensus among the experts was examined to determine whether consensus had been achieved. There is no single specific scientific method for measuring expert consensus in the Delphi method. However, Kendall's coefficient of concordance can be used to determine the degree of consensus. Kendall's coefficient of concordance is a measure used to determine the degree of coordination and agreement among several sets of rankings related to n phenomena. This measure indicates the rank correlation among m sets of rankings. The value of this measure is equal to one in the case of complete coordination or agreement and equal to zero in the complete absence of coordination. The stability of this coefficient or its insignificant growth in two consecutive rounds indicates that no increase in agreement has occurred and that the consultation process should be stopped (Kendall, 1977). Accordingly, the value of Kendall's coefficient of concordance in the second round was calculated as 0.701.

To stop the Delphi process, Kendall's coefficient was compared across two consecutive rounds. If this coefficient remained constant or showed only insignificant growth in two rounds, the process was stopped. Accordingly, the third-round Delphi questionnaire was designed and provided to the experts along with the feedback from the second round. The value of Kendall's coefficient of concordance in this stage was calculated as 0.861.

After calculating Kendall's coefficient of concordance, it was found that a considerable increase had occurred in the value of this coefficient; therefore, the consultation process could not be stopped in this round. The fourth-round Delphi questionnaire was prepared and provided to the experts along with the feedback from the third round. The value of Kendall's coefficient of concordance in this stage was calculated as 0.863. After calculating Kendall's coefficient, it was found that no noticeable increase had occurred, and Kendall's coefficient of concordance had remained almost constant in the third and fourth consecutive rounds; therefore, consensus was achieved. Accordingly, the mean of the final round was considered the final weight of each subdimension, and because a seven-point Likert scale was used, a mean below 5 was used as the criterion for eliminating factors (Lin & Chuang, 2012).

Table 1 presents the arithmetic mean of the experts' opinions from the first to the fourth rounds of the Delphi method, the final weight, and the rejection or acceptance status of each subdimension.

Table 1. Mean of Experts' Opinions from the First to the Fourth Rounds

Subcategory	Attribute	First Round	Second Round	Third Round	Fourth Round	Final Weight	Status
Improvement of Subscribers' Welfare and Satisfaction	Increasing subscribers' satisfaction	6.9	6.8	6.7	6.7	6.7	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Increasing subscribers' welfare	6.4	6.3	6.7	6.6	6.6	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Improving the quality of electricity distribution services	5.7	5.6	6.1	5.9	5.9	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Ease of using electronic services	6.8	6.8	6.6	6.9	6.9	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Reducing in-person visits	6.1	6.2	6.0	6.1	6.1	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Enjoyable and exciting nature of electronic services	4.2	5.8	3.8	3.9	3.9	Rejected
Improvement of Subscribers' Welfare and Satisfaction	Increasing the traceability of requests	6.3	5.9	5.5	6.2	6.2	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Saving time and costs in service delivery	6.5	6.3	6.6	6.5	6.5	Accepted
Improvement of Subscribers' Welfare and Satisfaction	Improving information dissemination	4.6	4.3	3.8	3.6	3.6	Rejected
Improvement of Financial and Economic Conditions	Enhancing economic security	4.9	4.9	4.4	4.5	4.5	Rejected
Improvement of Financial and Economic Conditions	Economic growth of society	5.6	5.7	5.4	5.5	5.5	Accepted

Improvement of Financial and Economic Conditions	Reducing imports	6.0	5.8	5.9	5.8	5.8	Accepted
Improvement of Financial and Economic Conditions	Selling more services	5.1	5.3	5.5	5.4	5.4	Accepted
Improvement of Financial and Economic Conditions	Reducing the subscriber churn rate	6.1	6.0	6.2	6.1	6.1	Accepted
Market Development and Strengthening Organizational Position	Increasing awareness of subscribers	6.5	6.6	6.7	6.8	6.8	Accepted
Market Development and Strengthening Organizational Position	Possibility of attracting new subscribers	6.4	6.5	6.6	6.5	6.5	Accepted
Market Development and Strengthening Organizational Position	Creating behavioral intentions among subscribers	5.1	5.6	5.5	5.4	5.4	Accepted
Perceived Security of Electronic Services	Feeling secure in money transfers, bill payments, and check deposits	5.1	5.4	5.3	5.3	5.3	Accepted
Perceived Security of Electronic Services	Data security	4.6	4.7	4.8	4.7	4.7	Rejected
Perceived Security of Electronic Services	Protection of private financial data	6.8	6.6	6.5	6.6	6.6	Accepted
Perceived Security of Electronic Services	Existence of individuals' access levels to accounts	6.1	6.2	6.1	6.0	6.0	Accepted
Citizenship Behavior and Subscriber Loyalty	Using the suggestions and complaints box	3.8	3.7	3.6	4.1	4.1	Rejected
Citizenship Behavior and Subscriber Loyalty	Word-of-mouth advertising	5.8	5.7	5.6	5.7	5.7	Accepted
Citizenship Behavior and Subscriber Loyalty	Intention to reuse electronic services	5.7	5.3	5.6	5.0	5.0	Accepted
Citizenship Behavior and Subscriber Loyalty	Responsible behavior	5.6	5.9	6.1	6.0	6.0	Accepted
Citizenship Behavior and Subscriber Loyalty	Participation in surveys and satisfaction assessments	5.8	5.4	5.3	5.3	5.3	Accepted
Advantages of Electronic Service Configuration	Improving human resource productivity	4.2	4.1	4.0	4.1	4.1	Rejected
Advantages of Electronic Service Configuration	Consumption and payment information needed by subscribers	5.1	5.1	5.3	5.2	5.2	Accepted
Advantages of Electronic Service Configuration	Service recovery	6.2	6.0	5.8	5.9	5.9	Accepted
Advantages of Electronic Service Configuration	Reducing paper consumption	5.5	5.5	5.4	5.5	5.5	Accepted
Advantages of Electronic Service Configuration	Reducing fossil fuel consumption	6.7	6.3	6.2	6.0	6.0	Accepted
Advantages of Electronic Service Configuration	Essential access to subscribers	4.2	4.3	4.1	4.1	4.1	Rejected
Advantages of Electronic Service Configuration	Facilitating access to information	5.8	5.7	5.9	5.6	5.6	Accepted
Advantages of Electronic Service Configuration	Information accuracy	4.3	4.3	3.9	3.6	3.6	Rejected
Advantages of Electronic Service Configuration	Managing subscribers' consumption instead of nationwide power outages	3.8	3.7	3.6	3.6	3.6	Rejected
Advantages of Electronic Service Configuration	Making the company more agile in service delivery	6.0	5.8	5.5	5.4	5.4	Accepted
Advantages of Electronic Service Configuration	Information transparency	4.6	4.2	4.2	4.3	4.3	Rejected
Advantages of Electronic Service Configuration	Preventing financial losses imposed on subscribers due to outages	4.5	4.4	4.2	4.1	4.1	Rejected
Advantages of Electronic Service Configuration	Greater control over personal financial management	3.6	3.2	3.3	3.4	3.4	Rejected
Advantages of Electronic Service Configuration	Shortness of the response process to subscribers	5.9	5.1	5.2	5.3	5.3	Accepted
Attention to Social Values	Value of subscribers' knowledge	6.1	6.2	6.3	6.1	6.1	Accepted
Attention to Social Values	Market development through the use of electronic services for society	4.8	4.2	4.4	4.3	4.3	Rejected
Attention to Social Values	Multidimensionality of issues and ambiguity in the consequences of policy implementation	6.0	5.8	5.6	5.5	5.5	Accepted

Attention to Social Values	Environmental and social limitations	5.3	4.6	4.8	5.1	5.1	Accepted
Attention to Emotional Values	Value of subscribers' influence	5.9	5.7	5.4	5.1	5.1	Accepted
Attention to Emotional Values	Monitoring and analyzing the value of target subscribers	4.9	5.1	5.3	5.2	5.2	Accepted
Attention to Emotional Values	Changing subscribers' attitudes	5.7	5.9	5.9	5.9	5.9	Accepted
Attention to Emotional Values	Service enrichment	4.3	4.2	4.1	3.9	3.9	Rejected
Attention to Functional Values	Value of providing fast and efficient electronic services	5.8	5.8	5.9	5.9	5.9	Accepted
Attention to Functional Values	Subscribers' lifetime value	4.6	5.1	5.2	5.4	5.4	Accepted
Attention to Functional Values	Cost-effectiveness of using electronic services	6.4	5.9	5.6	5.4	5.4	Accepted
Attention to Functional Values	Advanced electronic equipment	4.5	4.4	3.9	3.8	3.8	Rejected
Organizational Flexibility	Flexibility of organizational structure and processes	6.2	6.1	6.0	6.0	6.0	Accepted
Organizational Flexibility	Using elites and experienced industry specialists for policymaking	5.5	5.6	5.5	5.5	5.5	Accepted
Organizational Flexibility	Willingness to solve problems and challenges	5.4	5.0	5.1	5.1	5.1	Accepted
Organizational Flexibility	Connection of electricity distribution industry contractors with the electronic service cycle	5.2	4.8	4.9	5.0	5.0	Accepted
Organizational Flexibility	Creativity in development, including new ideas and solutions	4.1	4.2	4.4	4.0	4.0	Rejected
Improvement of Subscribers' Motivation and Empowerment	Subscribers' trust in electronic service delivery	5.7	5.8	5.8	5.8	5.8	Accepted
Improvement of Subscribers' Motivation and Empowerment	Improving subscribers' knowledge and skills	6.2	6.1	6.1	6.1	6.1	Accepted
Improvement of Subscribers' Motivation and Empowerment	Connection and communication with others	4.8	4.6	4.4	4.4	4.4	Rejected
Improvement of Subscribers' Motivation and Empowerment	Subscribers' commitment and attachment to the brand	4.2	4.1	4.1	4.3	4.3	Rejected
Improvement of Subscribers' Motivation and Empowerment	Subscribers' enthusiasm for electronic services	6.0	5.8	5.9	5.8	5.8	Accepted
Improvement of Subscribers' Motivation and Empowerment	Providing rewards and discounts on subscribers' costs to create shared values	5.5	5.7	5.8	5.7	5.7	Accepted
Development of Interactions with Subscribers	Creating a subscribers' club and fostering their loyalty	5.6	5.8	5.3	5.6	5.6	Accepted
Development of Interactions with Subscribers	Establishing positive and constructive communication and negotiation skills	4.7	4.6	4.4	4.0	4.0	Rejected
Development of Interactions with Subscribers	Continuous and regular assessment of subscribers' behavior and attitudes	6.3	5.5	6.5	6.7	6.7	Accepted
Development of Interactions with Subscribers	Conversation with artificial intelligence about personal accounts	3.8	4.2	4.1	4.1	4.1	Rejected
Development of Interactions with Subscribers	Enhancing interaction between the company and subscribers	5.1	5.7	5.8	5.9	5.9	Accepted
Development and Improvement of Services	Using an automated voice menu	6.0	5.8	5.8	5.4	5.4	Accepted
Development and Improvement of Services	Providing prices electronically	5.4	5.6	5.5	5.5	5.5	Accepted
Development and Improvement of Services	Increasing service diversity and quality	4.5	4.5	4.1	4.0	4.0	Rejected
Development and Improvement of Services	Developing infrastructure and software for providing electronic services	5.3	5.6	6.1	6.0	6.0	Accepted
Development and Improvement of Services	Installing controllable and observable meters for subscribers and enabling electronic access to information	5.4	5.5	5.9	5.7	5.7	Accepted
Development and Improvement of Services	Using user-friendly applications	5.4	6.1	6.0	6.0	6.0	Accepted
Development and Improvement of Services	Receiving personal investment advice	3.7	4.2	4.3	4.1	4.1	Rejected
Development and Improvement of Services	Appropriate rules for subscribers' entry and exit	5.0	4.8	4.4	4.1	4.1	Rejected
Complexity of the Electricity Distribution Industry	Differences in policies and strategies	4.6	4.9	4.3	4.2	4.2	Rejected
Complexity of the Electricity Distribution Industry	Traditional organizational structure of the electricity distribution industry	5.7	5.6	5.5	5.3	5.3	Accepted

Complexity of the Electricity Distribution Industry	Legal gaps in the provision of electronic services	6.4	6.3	6.5	6.3	6.3	Accepted
Complexity of the Electricity Distribution Industry	Various cumbersome regulations	5.1	4.9	5.2	5.0	5.0	Accepted
National Technology Infrastructure	Hardware and software equipment, including technical and technological infrastructure	5.6	5.6	5.5	5.6	5.6	Accepted
National Technology Infrastructure	Developing international relations with other countries	6.7	6.6	6.7	6.7	6.7	Accepted
National Technology Infrastructure	Developing communication and telecommunication networks	4.2	4.2	3.8	3.9	3.9	Rejected
National Technology Infrastructure	Modern communication networks and information systems	6.3	5.9	5.9	5.8	5.8	Accepted
Environmental Conditions of the Electricity Distribution Industry	Economic prosperity or recession	3.9	4.2	4.3	4.4	4.4	Rejected
Environmental Conditions of the Electricity Distribution Industry	Subscribers' belief in value creation through electronic services	5.7	5.7	5.9	5.5	5.5	Accepted
Environmental Conditions of the Electricity Distribution Industry	Government economic policies	5.6	5.5	5.4	5.4	5.4	Accepted
Environmental Conditions of the Electricity Distribution Industry	Existence of parallel organizations and ambiguity in their boundaries and duties	3.9	3.9	3.7	3.6	3.6	Rejected
Environmental Conditions of the Electricity Distribution Industry	Imbalance between electricity production and consumption in the country during peak-load seasons and critical periods	6.5	6.0	6.1	6.2	6.2	Accepted
Subscribers' Characteristics	Subscribers' values, expectations, and demands	5.6	5.7	5.7	5.9	5.9	Accepted
Subscribers' Characteristics	High awareness and knowledge of subscribers	6.1	5.8	5.6	5.6	5.6	Accepted
Subscribers' Characteristics	Culture supportive of innovation and technology	5.6	5.1	5.4	5.6	5.6	Accepted
Subscribers' Characteristics	Large number and geographical dispersion of subscribers	3.1	2.8	3.3	3.5	3.5	Rejected
Subscribers' Characteristics	Subscribers' preference for using traditional services	5.9	5.7	6.1	6.2	6.2	Accepted
Subscribers' Characteristics	High average age among consumers	6.2	6.3	6.6	6.3	6.3	Accepted
Subscribers' Characteristics	Subscribers' insufficient familiarity with electronic services	3.6	4.1	4.1	4.3	4.3	Rejected
Dynamism of the Electricity Distribution Industry	Importance of providing information to subscribers	5.5	5.7	5.6	5.6	5.6	Accepted
Dynamism of the Electricity Distribution Industry	Subscribers' needs and expectations	4.5	4.8	4.9	5.2	5.2	Accepted
Dynamism of the Electricity Distribution Industry	Subscribers' knowledge and awareness	5.7	5.3	5.5	5.5	5.5	Accepted
Culture Building	Managers' and employees' belief in shared value creation	5.7	5.8	5.4	5.5	5.5	Accepted
Culture Building	Pathology and satisfaction assessment of subscribers regarding electronic services	4.2	3.9	4.1	4.5	4.5	Rejected
Culture Building	Emphasis on customer orientation in the electricity distribution industry	6.1	5.8	5.7	5.8	5.8	Accepted
Culture Building	Organizational culture of human resources	6.2	5.9	5.9	6.1	6.1	Accepted
Culture Building	Organizational strategies	5.1	5.4	5.7	5.7	5.7	Accepted
Economic and Social Pressures	Importance of social objectives	6.2	6.4	6.6	6.3	6.3	Accepted
Economic and Social Pressures	Importance of economic objectives	5.0	5.2	5.4	5.5	5.5	Accepted
Economic and Social Pressures	Importance of the public image of the enterprise	6.1	6.2	5.9	5.7	5.7	Accepted
Economic and Social Pressures	Relative role of profit-seeking objectives	4.0	4.1	3.9	4.2	4.2	Rejected
Service Development Capability	Having various communication channels, such as telephone and email	3.0	3.1	3.3	3.0	3.0	Rejected
Service Development Capability	Establishing constructive and respectful communication with subscribers	4.9	5.2	5.4	5.5	5.5	Accepted
Service Development Capability	Developing the competitiveness of the electricity distribution industry	6.2	6.6	6.0	5.9	5.9	Accepted

Service Development Capability	Availability of employees	4.9	4.0	4.9	4.2	4.2	Rejected
Service Development Capability	Designing, developing, and improving electronic service packages based on needs assessments and feedback	5.7	6.1	6.3	6.3	6.3	Accepted
Service Development Capability	Continuous monitoring and observation of subscribers	6.4	6.3	6.2	6.1	6.1	Accepted
Service Development Capability	Orderliness of work processes in the distribution company	3.3	3.1	3.0	3.2	3.2	Rejected
Service Development Capability	Needs assessment through the suggestion system	5.7	6.0	6.0	5.9	5.9	Accepted
Knowledge and Executive Capabilities of the Electricity Distribution Company	Company awareness of the importance of subscribers' satisfaction and opinions	6.1	5.7	5.9	6.0	6.0	Accepted
Knowledge and Executive Capabilities of the Electricity Distribution Company	Relative capability in measuring the company's popularity and acceptability	4.1	4.0	4.3	4.4	4.4	Rejected
Knowledge and Executive Capabilities of the Electricity Distribution Company	Marketing and public relations capabilities	4.7	4.6	4.6	4.5	4.5	Rejected
Knowledge and Executive Capabilities of the Electricity Distribution Company	Complexity of processes and interactions among existing systems	5.8	5.9	6.1	6.2	6.2	Accepted
Knowledge and Executive Capabilities of the Electricity Distribution Company	Level of awareness of decision-making managers	5.9	5.8	5.8	5.8	5.8	Accepted
Knowledge and Executive Capabilities of the Electricity Distribution Company	Ability to provide appropriate and timely support to subscribers	5.2	5.5	5.3	5.3	5.3	Accepted
Managerial Barriers in the Electricity Distribution Company	Perspective and mindset of senior managers of the Ministry of Energy	5.2	5.3	5.4	5.4	5.4	Accepted
Managerial Barriers in the Electricity Distribution Company	Unclear position of electricity distribution in the organizational structure	4.9	4.7	4.6	4.5	4.5	Rejected
Managerial Barriers in the Electricity Distribution Company	Low level of senior management knowledge regarding electricity distribution policymaking	5.8	5.7	5.6	5.4	5.4	Accepted
Managerial Barriers in the Electricity Distribution Company	High cost of infrastructure development	5.0	5.5	5.7	5.6	5.6	Accepted
Managerial Barriers in the Electricity Distribution Company	Resistance to change	4.9	5.0	5.0	5.0	5.0	Accepted
Managerial Barriers in the Electricity Distribution Company	Lack of support and resource allocation by senior management	5.6	5.5	5.3	5.4	5.4	Accepted
Existence of Experienced Approaches in the Electricity Distribution Company	Drawing inspiration from successful global experiences	4.5	5.0	5.3	5.5	5.5	Accepted
Existence of Experienced Approaches in the Electricity Distribution Company	Efforts to expand cooperation with other companies and individuals	3.1	3.6	3.2	3.3	3.3	Rejected
Existence of Experienced Approaches in the Electricity Distribution Company	Developing modern approaches to corporate social initiatives in Iran	4.9	5.3	5.3	5.4	5.4	Accepted
Existence of Experienced Approaches in the Electricity Distribution Company	Existence of a long-term horizon for company activities	5.7	5.9	6.1	6.0	6.0	Accepted
Existence of Experienced Approaches in the Electricity Distribution Company	Existence of motivational grounds for adopting cost-reduction approaches	5.1	4.4	4.4	4.5	4.5	Rejected
Characteristics of the Electricity Distribution Company	Effect of company size on implementing measures	6.2	6.4	6.3	6.2	6.2	Accepted
Characteristics of the Electricity Distribution Company	Stability in company success and profitability	5.4	5.3	5.2	5.3	5.3	Accepted

Characteristics of the Electricity Distribution Company	Unprofessional policymaking in electricity distribution	3.9	3.9	3.8	3.8	3.8	Rejected
Characteristics of the Electricity Distribution Company	Quality and diversity of electricity distribution services	4.8	4.2	4.2	4.4	4.4	Rejected
Characteristics of the Electricity Distribution Company	Data security and protection of customer information	5.1	5.2	5.3	5.3	5.3	Accepted
Characteristics of the Electricity Distribution Company	Skilled, educated, and knowledge-based human resources	4.9	5.1	5.2	5.2	5.2	Accepted

As shown in Table 1, out of the 139 indicators included in the model, 98 indicators were accepted and 41 indicators were rejected. Thus, the indigenous model of shared value

creation based on electronic services in Semnan Province Electricity Distribution Company was extracted as presented in Table 2.

Table 2. Indigenous Model of Shared Value Creation Based on Electronic Services in Semnan Province Electricity Distribution Company

Subcategory	Attribute
Dynamism of the Electricity Distribution Industry	Importance of providing information to subscribers
Dynamism of the Electricity Distribution Industry	Subscribers' needs and expectations
Dynamism of the Electricity Distribution Industry	Subscribers' knowledge and awareness
Dynamism of the Electricity Distribution Industry	Managers' and employees' belief in shared value creation
Culture Building	Emphasis on customer orientation in the electricity distribution industry
Culture Building	Organizational culture of human resources
Culture Building	Organizational strategies
Economic and Social Pressures	Importance of social objectives
Economic and Social Pressures	Importance of economic objectives
Economic and Social Pressures	Importance of the public image of the enterprise
Service Development Capability	Establishing constructive and respectful communication with subscribers
Service Development Capability	Developing the competitiveness of the electricity distribution industry
Service Development Capability	Designing, developing, and improving electronic service packages based on needs assessments and feedback
Service Development Capability	Continuous monitoring and observation of subscribers
Service Development Capability	Needs assessment through the suggestion system
Attention to Social Values	Value of subscribers' knowledge
Attention to Social Values	Multidimensionality of issues and ambiguity in the consequences of policy implementation
Attention to Social Values	Environmental and social limitations
Attention to Emotional Values	Value of subscribers' influence
Attention to Emotional Values	Monitoring and analyzing the value of target subscribers
Attention to Emotional Values	Changing subscribers' attitudes
Attention to Functional Values	Value of providing fast and efficient electronic services
Attention to Functional Values	Subscribers' lifetime value
Attention to Functional Values	Cost-effectiveness of using electronic services
Knowledge and Executive Capabilities of the Electricity Distribution Company	Company awareness of the importance of subscribers' satisfaction and opinions
Knowledge and Executive Capabilities of the Electricity Distribution Company	Complexity of processes and interactions among existing systems
Knowledge and Executive Capabilities of the Electricity Distribution Company	Level of awareness of decision-making managers
Knowledge and Executive Capabilities of the Electricity Distribution Company	Ability to provide appropriate and timely support to subscribers
Managerial Barriers in the Electricity Distribution Company	Perspective and mindset of senior managers of the Ministry of Energy
Managerial Barriers in the Electricity Distribution Company	Low level of senior management knowledge regarding electricity distribution policymaking
Managerial Barriers in the Electricity Distribution Company	High cost of infrastructure development
Managerial Barriers in the Electricity Distribution Company	Resistance to change
Managerial Barriers in the Electricity Distribution Company	Lack of support and resource allocation by senior management

Existence of Experienced Approaches in the Electricity Distribution Company	Drawing inspiration from successful global experiences
Existence of Experienced Approaches in the Electricity Distribution Company	Developing modern approaches to corporate social initiatives in Iran
Existence of Experienced Approaches in the Electricity Distribution Company	Existence of a long-term horizon for company activities
Characteristics of the Electricity Distribution Company	Effect of company size on implementing measures
Characteristics of the Electricity Distribution Company	Stability in company success and profitability
Characteristics of the Electricity Distribution Company	Data security and protection of customer information
Characteristics of the Electricity Distribution Company	Skilled, educated, and knowledge-based human resources
Complexity of the Electricity Distribution Industry	Traditional organizational structure of the electricity distribution industry
Complexity of the Electricity Distribution Industry	Legal gaps in the provision of electronic services
Complexity of the Electricity Distribution Industry	Various cumbersome regulations
National Technology Infrastructure	Hardware and software equipment, including technical and technological infrastructure
National Technology Infrastructure	Developing international relations with other countries
National Technology Infrastructure	Modern communication networks and information systems
Environmental Conditions of the Electricity Distribution Industry	Subscribers' belief in value creation through electronic services
Environmental Conditions of the Electricity Distribution Industry	Government economic policies
Environmental Conditions of the Electricity Distribution Industry	Imbalance between electricity production and consumption in the country during peak-load seasons and critical periods
Subscribers' Characteristics	Subscribers' values, expectations, and demands
Subscribers' Characteristics	High awareness and knowledge of subscribers
Subscribers' Characteristics	Culture supportive of innovation and technology
Subscribers' Characteristics	Subscribers' preference for using traditional services
Subscribers' Characteristics	High average age among consumers
Organizational Flexibility	Flexibility of organizational structure and processes
Organizational Flexibility	Using elites and experienced industry specialists for policymaking
Organizational Flexibility	Willingness to solve problems and challenges
Organizational Flexibility	Connection of electricity distribution industry contractors with the electronic service cycle
Improvement of Subscribers' Motivation and Empowerment	Subscribers' trust in electronic service delivery
Improvement of Subscribers' Motivation and Empowerment	Improving subscribers' knowledge and skills
Improvement of Subscribers' Motivation and Empowerment	Subscribers' enthusiasm for electronic services
Improvement of Subscribers' Motivation and Empowerment	Providing rewards and discounts on subscribers' costs to create shared values
Development of Interactions with Subscribers	Creating a subscribers' club and fostering their loyalty
Development of Interactions with Subscribers	Continuous and regular assessment of subscribers' behavior and attitudes
Development of Interactions with Subscribers	Enhancing interaction between the company and subscribers
Development and Improvement of Services	Using an automated voice menu
Development and Improvement of Services	Providing prices electronically
Development and Improvement of Services	Developing infrastructure and software for providing electronic services
Development and Improvement of Services	Installing controllable and observable meters for subscribers and enabling electronic access to information
Development and Improvement of Services	Using user-friendly applications
Improvement of Subscribers' Welfare and Satisfaction	Increasing subscribers' satisfaction
Improvement of Subscribers' Welfare and Satisfaction	Increasing subscribers' welfare
Improvement of Subscribers' Welfare and Satisfaction	Improving the quality of electricity distribution services
Improvement of Subscribers' Welfare and Satisfaction	Ease of using electronic services
Improvement of Subscribers' Welfare and Satisfaction	Reducing in-person visits
Improvement of Subscribers' Welfare and Satisfaction	Increasing the traceability of requests
Improvement of Subscribers' Welfare and Satisfaction	Saving time and costs in service delivery
Improvement of Financial and Economic Conditions	Economic growth of society
Improvement of Financial and Economic Conditions	Reducing imports
Improvement of Financial and Economic Conditions	Selling more services
Improvement of Financial and Economic Conditions	Reducing the subscriber churn rate

Market Development and Strengthening Organizational Position	Increasing awareness of subscribers
Market Development and Strengthening Organizational Position	Possibility of attracting new subscribers
Market Development and Strengthening Organizational Position	Creating behavioral intentions among subscribers
Perceived Security of Electronic Services	Feeling secure in money transfers, bill payments, and check deposits
Perceived Security of Electronic Services	Protection of private financial data
Perceived Security of Electronic Services	Existence of individuals' access levels to accounts
Citizenship Behavior and Subscriber Loyalty	Word-of-mouth advertising
Citizenship Behavior and Subscriber Loyalty	Intention to reuse electronic services
Citizenship Behavior and Subscriber Loyalty	Responsible behavior
Citizenship Behavior and Subscriber Loyalty	Participation in surveys and satisfaction assessments
Advantages of Electronic Service Configuration	Consumption and payment information needed by subscribers
Advantages of Electronic Service Configuration	Service recovery
Advantages of Electronic Service Configuration	Reducing paper consumption
Advantages of Electronic Service Configuration	Reducing fossil fuel consumption
Advantages of Electronic Service Configuration	Facilitating access to information
Advantages of Electronic Service Configuration	Making the company more agile in service delivery
Advantages of Electronic Service Configuration	Shortness of the response process to subscribers

4. Discussion and Conclusion

The purpose of the present study was to identify and extract the indicators of a shared value creation model based on electronic services in Semnan Province Electricity Distribution Company. The findings of the Delphi process showed that, after four rounds of expert judgment, consensus was achieved among the experts, as Kendall's coefficient of concordance increased from 0.701 in the second round to 0.861 in the third round and then reached 0.863 in the fourth round. The negligible increase between the third and fourth rounds indicated the stability of expert opinions and the achievement of sufficient consensus. Based on the final-round mean scores and the elimination criterion of a mean below 5 on the seven-point Likert scale, 98 indicators were accepted and 41 indicators were rejected from among the 139 indicators included in the model. This result demonstrates that shared value creation based on electronic services in the electricity distribution industry is a multidimensional construct that depends not only on technological infrastructure but also on organizational, managerial, customer-related, social, economic, functional, and security-related factors. The use of a multi-round Delphi procedure and final expert consensus is consistent with methodological approaches that emphasize expert-based prioritization and iterative refinement in model development studies [15].

One of the most important findings of the study was that the accepted indicators covered a wide range of value dimensions, including improvement of subscribers' welfare and satisfaction, financial and economic improvement,

market development, perceived security of electronic services, subscriber loyalty, electronic service configuration benefits, social values, emotional values, functional values, organizational flexibility, subscriber motivation and empowerment, development of interactions with subscribers, and service development. This result confirms that electronic services should not be interpreted merely as technical tools for administrative automation. Rather, they should be understood as interactive service systems through which subscribers, employees, managers, contractors, technologies, and institutional conditions jointly participate in value creation. This interpretation is consistent with the value co-creation perspective, according to which value emerges from interaction, resource integration, experience, and participation rather than from unilateral organizational service delivery [1, 16, 17]. In this regard, the present study supports the view that electronic services in public utilities can become a platform for shared value creation when they are designed around subscribers' needs, organizational capabilities, and broader public outcomes.

The acceptance of indicators related to subscribers' welfare and satisfaction, such as increasing subscribers' satisfaction, increasing welfare, improving service quality, ease of use, reducing in-person visits, increasing request traceability, and saving time and costs, indicates that experts considered the experiential and practical value of electronic services highly important. This finding is aligned with studies showing that digital service environments create value when they improve convenience, accessibility, responsiveness, and user experience [3, 5]. In electricity distribution services, subscribers often interact with the

company for bill payment, outage reporting, service requests, consumption information, and complaint follow-up. Therefore, electronic services create value when they reduce friction in these interactions and provide users with more control over the service process. This result also supports the argument that digital service design should focus on micro-level mechanisms of interaction, feedback, and usability, because value is realized when users can actually integrate digital services into their everyday practices [3, 18].

The findings also showed that indicators related to perceived security were partly accepted, including feeling secure in money transfers, bill payments, and check deposits; protection of private financial data; and the existence of access levels for individuals. However, the general indicator of data security was rejected. This mixed result is theoretically meaningful because it suggests that experts did not view security as an abstract technological concept but rather prioritized security dimensions that are directly visible and meaningful to subscribers. In electronic services, users are more likely to evaluate security through concrete experiences such as payment safety, privacy protection, and controlled access. This finding is consistent with research on digital service ecosystems showing that trust, perceived control, privacy protection, and risk reduction are central to user acceptance and value co-creation [8, 9]. In addition, because electricity distribution companies handle sensitive consumption, billing, and account information, perceived security can directly influence subscribers' willingness to continue using electronic services and participate in digital interactions.

Another important finding was the acceptance of several indicators related to subscriber loyalty and citizenship behavior, including word-of-mouth advertising, intention to reuse electronic services, responsible behavior, and participation in surveys and satisfaction assessments. This result indicates that the value created through electronic services is not limited to immediate service outcomes but can also generate behavioral consequences. When subscribers perceive electronic services as useful, secure, responsive, and efficient, they are more likely to reuse them, recommend them to others, and cooperate with the organization through feedback mechanisms. This interpretation is consistent with studies indicating that value co-creation practices can enhance affective commitment, psychological ownership, and loyalty in digital and brand communities [6]. It is also compatible with research emphasizing that user participation in digital service

environments can strengthen engagement and co-created outcomes [4, 14]. In the context of electricity distribution, subscriber cooperation is especially important because demand management, service improvement, and digital adoption depend on subscribers' willingness to participate in the service ecosystem.

The results further revealed that the advantages of electronic service configuration were among the accepted components of the final model. Indicators such as consumption and payment information needed by subscribers, service recovery, reduction of paper consumption, reduction of fossil fuel consumption, easier access to information, organizational agility in service delivery, and shortening the response process were retained in the final model. This finding shows that experts recognized both operational and environmental benefits of electronic services. Electronic services can reduce paper-based processes, minimize unnecessary commuting, facilitate faster responses, and support more agile organizational routines. These findings are consistent with service-dominant and digital transformation literature, which argues that value is produced through the reconfiguration of resources, processes, and service interfaces [10, 19]. In addition, the environmental implications of reduced paper and fuel consumption indicate that shared value creation in electricity distribution should include social and ecological outcomes, not only economic or customer satisfaction outcomes.

The acceptance of indicators related to social, emotional, and functional values also confirms the multidimensionality of the proposed model. In the social value dimension, the value of subscribers' knowledge, multidimensionality of issues, ambiguity in policy implementation consequences, and environmental and social limitations were accepted. In the emotional value dimension, the value of subscribers' influence, monitoring and analysis of target subscribers' value, and changing subscribers' attitudes were accepted. In the functional value dimension, fast and efficient electronic service provision, subscribers' lifetime value, and cost-effectiveness of electronic service use were accepted. These findings are consistent with the idea that value co-creation includes cognitive, affective, behavioral, relational, and practical dimensions [17, 20]. They also align with research emphasizing that digital platforms and electronic services should be evaluated according to both user experience and system-level outcomes [11, 12]. Therefore, the extracted model appropriately reflects the complexity of shared value creation in public-service electronic systems.

The findings also emphasized the importance of organizational flexibility, knowledge and executive capabilities, and managerial barriers. Accepted indicators included flexibility of organizational structure and processes, use of elites and experienced industry specialists, willingness to solve problems and challenges, the connection of electricity distribution contractors with the electronic service cycle, company awareness of subscribers' satisfaction and opinions, complexity of interactions among existing systems, awareness of decision-making managers, and timely support for subscribers. At the same time, managerial barriers such as the mindset of senior managers, low senior management knowledge about electricity distribution policymaking, high infrastructure costs, resistance to change, and lack of support and resource allocation were retained in the model. This combination indicates that the success of electronic services depends on both enabling capabilities and constraining barriers. This result supports studies showing that digital leadership, managerial design capability, innovation orientation, and organizational readiness are essential for converting digital technologies into shared value [2, 10]. It also aligns with the view that value co-creation mechanisms must be intentionally designed and institutionally supported rather than assumed to emerge automatically from technology adoption [2, 13].

The acceptance of indicators related to service development capability and development of interactions with subscribers indicates that the final model is strongly customer-oriented. Accepted indicators included respectful and constructive communication with subscribers, development of industry competitiveness, design and improvement of electronic service packages based on needs assessments and feedback, continuous monitoring of subscribers, needs assessment through the suggestion system, creation of a subscribers' club, continuous assessment of subscriber behavior and attitudes, and enhancement of interaction between the company and subscribers. These findings align with multichannel and service design perspectives, which argue that organizations must design multiple interaction channels and continuously validate customer value through feedback and participation [7, 13]. They also support previous research indicating that service users become co-creators of value when they are provided with meaningful channels for participation, communication, feedback, and service customization [21, 22]. In the electricity distribution industry, this result is highly important because subscriber feedback can help

companies improve service packages, identify operational weaknesses, and increase acceptance of electronic service systems.

The results also showed that several contextual and environmental categories were retained in the final model, including industry dynamism, culture building, economic and social pressures, complexity of the electricity distribution industry, national technology infrastructure, environmental conditions of the electricity distribution industry, and subscribers' characteristics. These accepted indicators show that shared value creation cannot be explained only through internal organizational variables. Rather, it is shaped by external conditions such as government economic policies, imbalance between electricity production and consumption during peak-load periods, legal gaps, cumbersome regulations, national technological infrastructure, international relations, modern communication networks, subscribers' expectations, subscribers' knowledge, innovation-supportive culture, preference for traditional services, and the high average age of consumers. This finding is consistent with ecosystem-based studies of digital value co-creation, which emphasize that value emerges from the interaction of multiple stakeholders, institutional arrangements, technological infrastructures, and environmental pressures [11, 14]. It also aligns with studies that view digital transformation as a contextual and systemic process rather than a purely organizational intervention [23, 24].

The rejected indicators also provide important insights. Some rejected indicators, such as the enjoyable and exciting nature of electronic services, artificial intelligence conversations about accounts, personal investment advice, advanced electronic equipment, and greater personal financial management control, suggest that experts prioritized practical, operational, and sector-relevant value over features that may be perceived as less necessary in the electricity distribution context. This result indicates that value co-creation must be context-sensitive; digital features that are valuable in banking, insurance, retail, or entertainment services may not be equally relevant in public utility services. This interpretation is consistent with research showing that digital service value depends on sectoral characteristics, user goals, and the fit between technology and service context [8, 9, 25]. In electricity distribution, subscribers primarily expect reliability, transparency, speed, security, cost reduction, service traceability, and easy access rather than hedonic or entertainment-oriented features. Therefore, the rejected

indicators helped refine the model by eliminating less contextually relevant dimensions.

Overall, the findings indicate that the indigenous model of shared value creation based on electronic services in Semnan Province Electricity Distribution Company integrates customer experience, public value, organizational capability, technological infrastructure, managerial readiness, service development, and environmental conditions. This model contributes to the literature by extending value co-creation research into the electricity distribution industry, a sector in which digital services are essential but underexplored from a shared value perspective. The findings support previous studies that conceptualize value co-creation as a dynamic, multi-actor, and technology-enabled process [1, 3, 4]. They also complement digital transformation research by showing that the success of electronic services depends on leadership, innovation, user participation, service design, security, organizational flexibility, and stakeholder interaction [5, 10, 26]. Therefore, the final model can serve as a practical framework for managers seeking to improve electronic services and as a theoretical basis for researchers investigating value creation in public utility ecosystems.

This study had several limitations. First, the research was conducted in the specific context of Semnan Province Electricity Distribution Company; therefore, the findings may not be fully generalizable to all electricity distribution companies or other public utility organizations without contextual adaptation. Second, the study relied on expert judgments through the Delphi method, and although expert consensus was achieved, the findings may still reflect the professional experiences, assumptions, and priorities of the selected experts. Third, the study identified and refined indicators but did not statistically test the causal relationships among the dimensions of the model. Fourth, subscribers' direct experiences were not examined through large-scale quantitative surveys, and therefore the model mainly reflects expert-based interpretation rather than direct customer-based validation.

Future studies should empirically test the extracted model using quantitative methods such as structural equation modeling to examine the relationships among the main dimensions, indicators, and outcomes of shared value creation. Researchers can also compare the model across different electricity distribution companies in various provinces to assess its generalizability and identify region-specific differences. In addition, future research should include subscribers, employees, managers, and contractors

as separate stakeholder groups to compare their perceptions of electronic service value. Longitudinal studies are also recommended to examine how electronic service adoption, subscriber trust, perceived security, and loyalty change over time. Furthermore, future studies can investigate the role of emerging technologies such as artificial intelligence, smart meters, mobile applications, and predictive analytics in strengthening shared value creation in the electricity distribution industry.

Managers of electricity distribution companies should use the extracted model as a diagnostic and strategic framework for improving electronic services. Priority should be given to indicators that directly affect subscribers' welfare and satisfaction, such as ease of use, reduced in-person visits, request traceability, timely support, information access, and secure electronic payment. Managers should also strengthen organizational flexibility, allocate sufficient resources for digital infrastructure, reduce resistance to change, and improve the digital knowledge of decision-makers and employees. Electronic service packages should be designed based on systematic needs assessment, subscriber feedback, and continuous monitoring of user behavior. In addition, practical attention should be given to older subscribers, users with lower digital literacy, and those who still prefer traditional services so that digital transformation does not reduce service accessibility or public trust.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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