Designing Generative Artificial Intelligence Solutions: A Value-Cocreation Perspective

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In an era where Gen AI significantly shapes customer interactions and experiences, gaining a comprehensive understanding of the collaborative mechanisms in which Gen AI solutions are designed is essential. Through a structured review, this study highlights the importance of functional collaboration among various actors and resource pools, emphasizing the interconnected nature of the ecosystem. The findings synthesize insights from studies identified from existing literature, offering a holistic view of how value is co-created in the design and deployment of Gen AI solutions, thereby advancing theoretical and practical implications for businesses seeking to optimize AI-driven market strategy.

Keywords: Value Co-Creation, Co-creation, Generative Artificial Intelligence, Artificial Intelligence, Ecosystem.

1. Introduction

In today's dynamic and technology-driven marketplace, the concept of value co-creation has emerged as a critical pillar in shaping customer experiences and fostering business growth (Prahalad & Ramaswamy, 2004). Traditionally, value co-creation has emphasized on active collaboration between businesses and consumers. However, with the advent of Artificial Intelligence, the boundaries of this collaboration have significantly expanded, presenting new opportunities and challenges for both practitioners and scholars. The importance of value co-creation in driving customer satisfaction, loyalty, and competitive advantage has become prominent (Ranjan & Read, 2014). However, with the exponential growth of Digitization focusing on Artificial Intelligence, we know how marketers and consumers team up with Artificial Intelligence that facilitates Value co-creation across various areas of marketing like Retail and services (Huang & Rust, 2021a, 2021b, 2022), Industrial Marketing (Li et al., 2021), Customers in their decision-making journey (Chandra & Rahman, 2024).All these studies have added prominent value to the field of Value Co-creation with its multi-disciplinary view by adopting Artificial intelligence. Artificial intelligence has the potential to provide significant growth in marketing it benefits in the field of innovation (Fukawa & Rindfleisch, 2023),through chatbots, conversational agents, to enhance customized experiences and business efficiencies (Kot & Leszczyński, 2022)(Huang & Rust, 2024a) customer engagement, Service and Service ecosystem (Kaartemo & Helkkula, 2024) and various other different facets that enhance Customer experiences (Puntoni et al., 2021).

Definition	Elements	Source
The common element of Gen AI tools is the generation of seemingly intelligent output in response to a human-provider prompt, including text, code, simulations, images, 3D objects, and videos	Generates intelligent output	(Peres et al., 2023)
Generative AI generates coherent text that mirror what humans write or say, such that it can respond to user defined prompts, including questions or complex assignments.	Chat GPT	(Jürgensmeier & Skiera, 2024)
Generative AI are machine learning algorithms that can produce complex answers to a wide range of queries and power chatbots able to engage in sophisticated interactions with consumer	Interaction with consumers	(De Freitas et al., 2024)
A class of AI models that generate seemingly new content in the form of text, images and other media such as audio, videos, code and synthetic data	Creates novel content	(Kanbach et al., 2024; Susarla et al., 2023)

A particular group of AI model that is designed to produce new content is the Generative Artificial intelligence (Gen AI). Gen AI represents the latest evolution in the field of Artificial Intelligence and is used to create new content spanning from text, images, to videos (Huang & Rust, 2024b).One of the most distinctive features of Gen AI is its capability to create novel content, this technology is revolutionizing how businesses engage with consumers, enabling hyper-personalized experiences, predictive content generation, and seamless persuasion and engagement (Cillo & Rubera, 2024). For instance, Milkbikis, Britannia in its recent "Adengappa Kadhaigal" advertisement trained its large language model on household objects to create innovative storytelling content promoting equal parenting and innovative use of Gen AI technology. The idea of the company "everything around you can tell a story". All that the customers had to do was to scan the QR code on the Milkbikis biscuit wrap and scan any household object for different stories related to the object creating emotional value to the children's segments of its target consumers. Marketing is one of the most exposed domains to the Generative Artificial intelligence technology with many potentials (Park, 2024) (Hermann & Puntoni, 2024). The marketing literature that explores the impact of Gen AI for consumers and firms is still nascent to understand how Generative AI integrates into value co-creation by adopting a conceptual framework to integrate multiple theoretical perspectives in both fields. This study aims to bridge this gap by examining the intersection of

Generative AI and value co-creation, by identifying an ecosystem perspective as an overarching theoretical foundation and understand how generative AI used by the company will boosts consumers to participate actively in service ecosystems and enhance firms' capabilities in resource optimization and engagement.

We will begin by examining the definitions of both Co-creation and Generative AI, and then explore the rationale behind understanding the co-creation process within the context of Generative AI. This will help clarify the significance of investigating how co-creation occurs through the integration of Generative AI technologies.

Definition	Elements	Source
Value co-creation is the joint, collaborative and peer-like process of creating value both materially and symbolically, through voluntary contributions of multiple actors resulting in reciprocal wellbeing	Collaborative Efforts	(Busser & Shulga, 2018)
Co-creation refers to the service value created by customers and service companies to provide the desired customer service experience	Value Based	(Prahalad & Ramaswamy, 2004)
Co-creation as the active partnership of stakeholders including the firm, individual customers, employees, investors, and suppliers in a business through the exchange of operant and operant resources	Multi-stakeholders, Resources based	(Lusch & Vargo, 2014)

2. Methodology

The following systematic approach was employed to identify relevant studies on Generative Artificial Intelligence and value co-creation.

For Generative Artificial Intelligence

1. We first conducted a search in the Scopus database for studies containing the keywords "Generative Artificial Intelligence," "Generative AI," or "Gen AI."
2. We then reviewed these identified studies for cross-references that could be relevant to the topic.
3. Additionally, we searched for online-first articles and accepted manuscripts in selected journals to capture the most recent advancements in the field.
4. Inclusion Criteria: Studies were assessed for eligibility based on four specific criteria:

- **Subject Area:** Business and Management
- **Document Type:** Journal articles and review articles
- **Journal Quality:** A* journals according to the ABDC list, including *Journal of Consumer Psychology*, *European Journal of Marketing*, *Journal of Consumer Research*, *Journal of Marketing Research*, *Journal of the Academy of Marketing Science*, *Journal of Retailing*, *Journal of Marketing*, *International Journal of Research in Marketing*, *Industrial Marketing Management*, *Marketing Science*, and *Journal of Service Research*

For Value Co-Creation

1. A comprehensive search was conducted across Scopus database using the key terms "Value Co-creation", "Value cocreation", "Co-creation", "Cocreation."
2. We reviewed identified studies for cross-references and added further studies based on subjective assessment of their relevance.
3. The inclusion criteria established for Generative AI studies were applied here as well, focusing on studies within the value co-creation context.

Through the above inclusion criteria and forward and backward citation linking, we identified a total of 58 articles for this study, forming the foundation for a rigorous examination of Generative AI and value co-creation.

The Problem Statement

The literature reveals notable gaps in comprehensively understanding the scope of Generative AI and the unique values it creates (Chandra & Rahman, 2024). To effectively develop AI-driven marketing strategies, firms must assess both the benefits and trade-offs inherent in Generative AI models (Huang & Rust, 2024; Puntoni et al., 2021). Furthermore, theoretical advancements are needed to explore the multi-stakeholder impact of Generative AI, where significant influence across diverse actors is anticipated.

This study integrates several key gaps in the literature to formulate its primary objective: examining the co-creation process of Generative AI solutions (Chatbots, recommendation agents, virtual assistants) through an ecosystem perspective. Specifically, this study addresses two central research questions:

1. How should Generative AI solutions be designed within a co-creative ecosystem to optimize outcomes for all participating actors?
2. How can firms enhance outcomes for all stakeholders in the co-creation process of Generative AI solutions?

To explore these questions, we identify the main actors involved, the resources they integrate, and the outcomes resulting from the resource integration. While a few existing studies touch on these questions, there remains a critical need to understand the co-creation process firms undergo when implementing Generative AI solutions. This study aims to contribute incrementally to existing knowledge by offering a comprehensive, ecosystem-orientation for designing Generative AI solutions, thereby advancing both theoretical and practical insights into value co-creation.

The Co-creation Ecosystem

Co-creation, as a complex, multifaceted, and iterative process, involves the integration of diverse actors and resources both within and beyond the firm(Ranjan & Read, 2021). Co-creation of Gen AI solutions entail systems thinking through which

multiple resource-integrating actors are connected by institutional arrangements and there is mutual value creation from their service exchange (Petrescu et al., 2024). Designing Generative AI solutions necessitates this collaborative integration, which an ecosystem perspective can illuminate by classifying different levels of actor engagement. Actors in the ecosystem interact across micro, meso, macro, and meta levels. At the micro level, co-creation occurs within customer communities and individual firm settings involving consumers and employees. At the meso level, co-creation is established through dyadic interactions between firms, including their employees, and customers within service environments. The macro level expands to encompass collaborations between firms (technology providing firm and the service provider) and other industry stakeholders, forming an interconnected ecosystem. Finally, at the meta level, government (Petrescu et al., 2024) and institutional bodies play a regulatory and supportive role, shaping the broader environment in which Gen AI solutions evolve.

Actors involved in this Co-creation Ecosystem

The integration of Generative AI solutions involves several key actors, each playing a crucial role in the co-creation process. These actors primarily include service providers, technology firms, employees, and consumers. The social interactions among these actors are essential to the successful design and implementation of Generative AI solutions.

Service Providers are the firms that seek to integrate Generative AI solutions into their customer-facing interfaces, aiming to enhance customer service, improve customer experiences, and personalize offerings to better meet customer demands. Consumers are the ultimate beneficiaries of Generative AI integration, as they seek more convenient, responsive, and tailored services that Generative AI can provide. Technology Firms are the experts responsible for designing and developing the Generative AI solutions based on the specific needs of service providers. They play a pivotal role in creating and delivering AI systems that are customized to the requirements of the service providers. Finally, Governments (Petrescu et al., 2024)play an essential role in regulating the use of AI technologies to ensure that ethical, legal, and responsible practices are adhered to, safeguarding the interests of consumers and society at large.

3. The Operand and Operant Resources

To examine the development of Generative AI solutions within firms, it is crucial to identify the resources actors integrate, and the resulting outcomes of their engagement. The foundation of this co-creation process lies in service-dominant logic, which emphasizes the application of specialized skills and knowledge as the core of economic exchange (Lusch & Vargo, 2014). Within this framework, operand resources refer to tangible, static resources that are acted upon, while operant resources represent intangible assets, including managerial and customer service competencies, industry expertise, and UX design skills, that actively drive value creation.

The literature identifies three primary roles integral to the development and maintenance of Generative AI solutions: AI Trainers, UX Designers, and Business Analysts (Kot & Leszczyński, 2022). AI Trainers configure the question-and-answer interactions and determine the specific actions Generative AI agents must execute during customer interactions, exemplifying operand resources in the form of structured data, computing resources (Petrescu et al., 2024) and programmed responses. UX Designers and Business Analysts contribute operant resources by crafting the conversational flow and defining the agent's persona, as seen in the "Ask Disha" Generative AI customer service agent deployed by IRCTC Railways. Business Analysts further map the customer journey, refining points of engagement with the AI agent, and designing problem-resolution strategies to ensure efficient support experiences. Together, these roles highlight the interplay of operand and operant resources in optimizing Generative AI's role within customer service frameworks.

The Outcome Derived from Generative AI Solutions for Different Actors

Actors	Outcomes
Customers	In service provision, customers of the service provider evaluate customer service agents' performance through Net Promoter Scores (NPS), which are often based on response time, problem resolution effectiveness, and the extent to which the agent fosters a sense of being valued. Research suggests that a well-implemented (Gen AI) solution can achieve comparable levels of customer satisfaction to human customer service agents. Notably, studies indicate that individuals with social anxiety, mental health challenges(De Freitas et al., 2024), and debt management concerns often prefer engaging with artificial agents over human agents(Kot & Leszczyński, 2022)
Service Provider	Through the co-creation of Gen AI solutions, service providers can derive informational, transactional, strategic, and transformational value, enhancing both service quality and organizational agility. The implementation of Gen AI solutions enables service providers to manage customer queries with greater efficiency, reducing operational costs and accelerating service delivery. These benefits reflect Gen AI's capacity to drive multifaceted value creation, positioning it as a strategic asset in contemporary service provision.
Service Provider Employees	The integration of Generative AI in customer service allows service provider employees to allocate more time to complex tasks requiring creativity and higher-order thinking, such as managing customer complaints and escalation, rather than addressing basic customer inquiries.

4. Future Research Directions

To further advance the theoretical understanding of Generative AI-facilitated value co-creation, several promising avenues for future research emerge. First, conducting comparative analysis studies between firms that have integrated Generative AI solutions into their customer interfaces and those that have not could provide valuable insights into the specific value derived from such integration. This type of study could help broaden our understanding of the tangible and intangible benefits that firms accrue by deploying Generative AI, thereby enhancing the generalizability of the findings. Comparative studies could offer a

clearer picture of how the presence or absence of AI-driven solutions impacts firm performance, customer satisfaction, and overall business strategy.

A cross-sectional study design could also be beneficial for empirically examining the role of Generative AI in influencing customer participation behavior across different stages of service provision, including service production, service delivery, and even service failure. While conceptual papers emphasize that Generative AI drives innovation (Mariani & Dwivedi, 2024) for both firms and customers, empirical evidence on this matter remains limited. A well-designed empirical investigation could provide crucial insights into how Generative AI affects customer engagement, particularly during critical touchpoints in the customer journey. Further, exploring user perceptions of AI systems remains a critical area of research. Understanding how customers perceive and interact with AI-driven solutions can provide valuable insights into improving user interface design, enhancing customer trust, and fostering long-term customer relationships. In parallel, examining the broader implications of emerging technologies, particularly the role of AI in customer decision-making and engagement, could offer valuable contributions to the understanding of AI's evolving impact on consumer behavior. Collectively, these future research directions contribute to the expansion of the theoretical discourse surrounding Generative AI facilitated Value Co-creation.

5. Conclusion

Our work provides a substantial contribution to the understanding of value co-creation facilitated by Generative AI, particularly in the context of an era increasingly shaped by the pervasive influence of artificial intelligence on customer experiences. By examining the interactions of various actors within the ecosystem, this study highlights the complex dynamics of resource integration, offering valuable insights into how these interactions influence the co-creation process. The integration of the ecosystem perspective provides a nuanced understanding of the roles and contributions of service providers, technology firms, consumers, and other stakeholders in the design and implementation of Generative AI solutions. This approach not only enriches our comprehension of the co-creation process but also provides actionable knowledge for businesses seeking to optimize their value co-creation strategies. Specifically, it informs firms on how to enhance their marketing practices, improve user interfaces, and deliver superior customer experiences by leveraging Generative AI technologies. By uncovering the interdependencies between actors and their resource contributions, the study offers a foundational guide for businesses striving to stay competitive in a rapidly evolving technological landscape. Ultimately, this study contributes to the broader academic discourse on the transformative potential of Generative AI in value co-creation. It provides critical insights that are essential for businesses looking to harness the power of Generative AI to drive innovation, enhance customer satisfaction, and create sustainable value within the increasingly AI-driven market environment.

6. References

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