

Value Co-Creation through Digital Platform Ecosystems: Case Studies of Hair Salon Chains

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Abstract

Existing literature on digital platforms mostly focuses on value creation, delivery, and capture from a single perspective, without considering the coordination effects among these components. This study delves into the structure and dynamics of the ecosystem within Taiwan region's chain hairdressing industry, with a specific focus on platform models, ecosystem dynamics, complementarity among participants, and the process of value co-creation. Employing DART analysis, the research identifies patterns of value co-creation facilitated by digital platforms in Taiwan region's chain hairdressing sector. These platforms have revolutionized traditional, physical-centric industry models by introducing innovative customer experiences. The study highlights how businesses can capitalize on platform ecosystems to access comprehensive customer data and behavior patterns across multiple platforms, stores, and official LINE channels. This ecosystem establishment not only aids industry partners in expanding their customer base and fostering loyalty but also opens up sales avenues for cross-industry collaborations, thereby enhancing revenue opportunities.

Keywords

Value Co-Creation, Platform Ecosystems, Digital Platform, Experiential Value, DART Model, Hairdressing Industry

1. Introduction

Taiwan region's hairdressing industry has garnered international attention in recent years, particularly in competitions such as the Color Zoom contest hosted by the internationally renowned brand Goldwell, where Taiwan region has won

multiple awards, including championships, every year since 2008. According to the fiscal statistics report in Taiwan region for 2024, there were a total of 35,000 hairdressing and beauty establishments in 2023, with sales amounting to USD 1.5 billion. According to data from Taiwan region's Ministry of Economic Affairs, despite the industry's maturity and market saturation, the number of establishments and total sales have continued to grow in recent years. Taiwan region's service sector contributes approximately 61% to the national GDP and employs 6.8 million people, representing nearly 60% of total employment. Compared to the earlier era, which prioritized experiential needs over functional needs, the post-pandemic era has seen consumers increasingly value functional needs in hair salons, such as mobile payments, personalized management services, and appointment services.

Existing literature on digital platforms mostly focuses on value creation, delivery, and capture from a single perspective, without considering the coordination effects among these components. These interconnections represent a new frontier in digital platform literature and require further in-depth research (Madanaguli, Parida, Sjödin, & Oghazi, 2023). While the role of ecosystem orchestrators is not clearly defined in current research, many empirical and conceptual studies emphasize the importance of ecosystem orchestrators and their activities (Cobben, Ooms, Roijackers, & Radziwon, 2022). In ecosystem enterprises, leaders often play the role of coordinators as they can maximize value extraction (Hurmelinna-Laukkanen, Möller, & Nätti, 2022). Furthermore, the advantages derived from technology will also contribute to their role as coordinators (Lingens, Böger, & Gassmann, 2021). Therefore, this paper attempts to explore the transformation of the personal care & beauty industry into a simultaneous development of online and offline platforms from the perspective of leading companies in the platform ecosystem. We will propose that leading companies can integrate different resources through the platform model, create various service combinations, and develop different types of platform ecosystems through value co-creation with participants.

Chen (2023) found that in China's hairdressing industry, service personnel classify customers on WeChat and provide tailored care services. They also use WeChat to maintain relationships with customers. Currently, research on the integration of technology in Taiwan region's hairdressing industry is limited to case studies, lacking multiple case studies and cross-disciplinary comparisons within Taiwan region (Yang & Fan, 2023). The hairdressing industry is a service sector that requires active customer participation. Currently, there is limited research on co-creation between customers and service providers (Huang et al., 2022). Despite the growing body of theories on customer experience in recent years, empirical research on the topic is still in its infancy (Vesci et al., 2020).

Consequently, this study addresses the following research questions: 1) How to measure the value co-creation of the platform ecosystem bring to participants in Taiwan region's chain hairdressing industry? 2) How does the establishment of a platform ecosystem aid in the diversified development of Taiwan region's chain hairdressing industry?

2. Literature Review

2.1. Digital Platform Ecosystems

A digital platform ecosystem is a value network composed of platform owners, complementors, and consumers, where platform owners implement governance mechanisms to promote value co-creation (Hein et al., 2020). A digital platform ecosystem is fundamentally a system developed by platform leaders through the use of digital technology, integrating a diverse array of participants and heterogeneous resources (Márton, 2022). A platform ecosystem is an innovative ecosystem, wherein this collaborative structure ensures that a geographically unbounded network of complementors can create supplements, thereby enhancing the ecosystem value of the platform (Thomas & Autio, 2020). There is a lack of research to understand how system-level value emerges from the interactions of the digital platform ecosystems (Peng, Lu, & Gupta, 2023). Understanding this emergence in the case of chain hairdressing salons is crucial for comprehensively grasping the dynamics of value creation, governance, and sustainability in digital platform ecosystems. Identifying the mechanisms and processes that drive the emergence of system-level value, exploring the roles of different actors, the impact of technological advancements, and the influence of governance strategies in shaping these interactions is essential.

2.2. Value Emergence

From the perspective of service dominant logic (SDL), customers are regarded as effective or valuable units of production, and use/consumption is regarded as a production process related to the user (Lusch, Vargo, & Tanniru, 2009). SDL emphasizes the need for businesses to develop helpful strategies that provide guidance on how to identify, develop, and deploy resources to better serve customers (Grönroos, 2024). This service perspective has the potential to provide solutions to the need for enterprises to transform their business models to a logic based on a service approach (Kowalkowski, Witell, & Gustafsson, 2013; Vargo et al., 2023) proposes a dynamic process model, as shown in **Figure 1**. This model outlines four types of emergent phenomena within Digital platform ecosystems. These emergent phenomena categories are distinguished by the nature and degree of feedback between the constitutive elements (interacting actors and resources) and the emergent properties. Organizations need to capitalize on emergence in relation to innovation. Given that emergence is non-linear, managers should also move from time-bound (i.e., annual or quarterly) to continual processes related to strategy, innovation, and business planning—or else the organization runs the risk of being too slow to recognize emergent changes. In the context of chain hairdressing salons, the application of SDL principles can significantly enhance customer experience and operational efficiency. By recognizing customers as co-creators of value, salons can develop more personalized and responsive services. Additionally, the integration of digital technologies within the platform ecosystem allows for real-time feedback and continuous improvement, aligning with the

dynamic nature of emergence as described by Vargo. This approach not only fosters innovation but also ensures that the business model remains adaptable and resilient in a rapidly changing market environment.

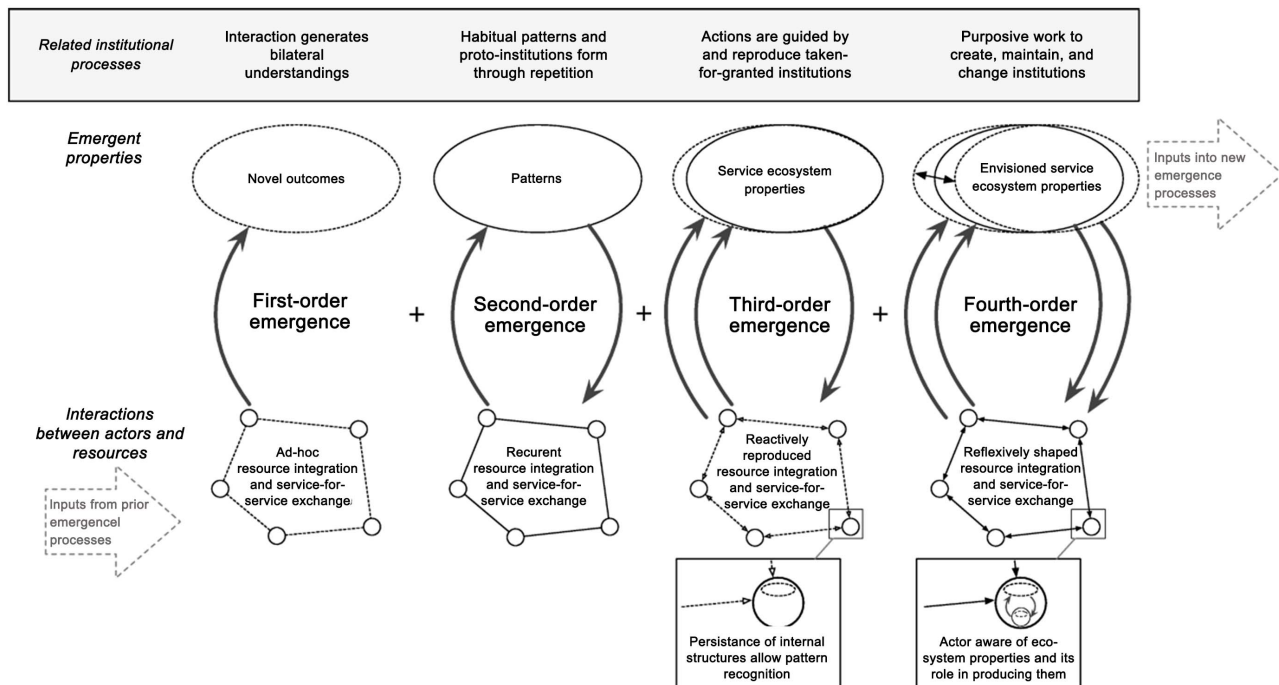


Figure 1. Four orders of emergence (Vargo et al., 2023).

2.3. Value Co-Creation

The concept of business ecosystems, combined with digital technology, has formed platform ecosystems. These ecosystems leverage the capabilities of digital tools to facilitate collaboration, innovation, and value creation among all participants within the ecosystem (Senyo, Liu, & Effah, 2019). Leading companies can drive the creation of innovative ecosystems by integrating and coordinating participants to bundle products or services into comprehensive solutions offered to customers (Adner, 2017; Jacobides, Cennamo, & Gawer, 2018) define two main characteristics of platform ecosystems: modularity and complementarity. Ecosystems require providers of complementary and innovative products or services, who are interdependent on each other. Prahalad & Ramaswamy (Prahalad & Ramaswamy, 2004) proposed the DART framework for measuring value co-creation, which divides consumer-business interactions into four components: Dialogue, Access, Risk Assessment, and Transparency. These components enable companies and their suppliers to gain deeper insights into consumers and obtain new ideas in design, engineering, and manufacturing. By combining transparency, risk assessment, access, and dialogue, companies can better engage customers as collaborators. Transparency facilitates cooperative dialogue with consumers. Together with mutual access and risk assessment, this approach can lead to new business models and functionalities aimed at co-creating experiences. By integrating

these DART components, platform ecosystems in the hairdressing industry can enhance value co-creation, leading to better service quality, higher customer satisfaction, and sustainable business growth.

In the context of platform ecosystems, these components interact to create a cohesive and collaborative environment where value is co-created. For example, in Taiwan region's chain hairdressing industry: 1) Dialogue: Salons and customers engage in continuous dialogue through digital platforms, allowing for real-time feedback and personalized service adjustments. 2) Access: Customers have access to a wide range of services and information through online booking systems, mobile apps, and social media platforms. 3) Risk Assessment: Salons and customers collaborate to assess the benefits and potential risks of new treatments or products, leading to more informed choices and higher satisfaction. 4) Transparency: Salons maintain transparency in their pricing, service offerings, and operational practices, fostering trust and long-term relationships with customers.

In Taiwan region's chain hairdressing industry, platform ecosystems have been instrumental in transforming traditional business models. By integrating digital tools, hair salons can offer enhanced services such as online booking, personalized recommendations, and mobile payments. These platforms facilitate collaboration between salons, product suppliers, and customers, leading to innovative service offerings and improved customer experiences. By focusing on value co-creation through platform ecosystems, businesses in the hairdressing industry can better meet customer needs, drive innovation, and achieve sustainable growth.

3. Methods

3.1. Case Studies

This study adopts a multiple case study approach to understand the platform ecosystem in Taiwan region's hairdressing industry, as well as the value structure and strategies within the ecosystem. Given that the digital platforms of hairdressing groups and the DART measurement model proposed in this study are relatively new phenomena, case studies are suitable for understanding current practices and phenomena. Multiple data collection methods are used to gather data on one or more entities (individuals, groups, or organizations) (Benbasat, Goldstein, & Mead, 1987), making the case study approach appropriate for this research. According to Yin (Yin, 2018), this study uses comparative analysis of multiple cases to build theory based on case-based empirical evidence. Through direct observation of visitor interactions with space and internal group interactions, the study focuses on providing in-depth descriptions and analyses of the observed phenomena. The data for this study were collected from four platform owners and hairdressing companies between 2022 and 2023. Sources include reports from government projects provided by these companies, with each case contributing approximately 20,000 to 30,000 words of printed material, as well as relevant news articles, company websites, and other publicly available information. The research team also engaged with the digital platforms through direct use and participation,

analyzing and evaluating based on actual usage experiences. Internal follow-up processes, field notes, and both formal and informal interactions with organizational members helped capture the significance of changes in real-time.

3.2. Case Selection

This study employs a purposive sampling method to select research cases. Based on the focus of this research, to ensure that the findings have significant theoretical implications and practical contributions, cases are chosen within the chain hairdressing industry that meet the main themes of this study, have initial innovative outcomes, are accessible, and have relatively rich data available for analysis (Patton, 1990). These groups have stores in northern, central and southern Taiwan region, as well as overseas, and are well known for their international brands. Three of these chains were established in the 1990s and have been operating in Taiwan region for 28 to 40 years, while the youngest chain has been operating for 12 years. The selected chains vary in size, ranging from 11 stores to 500 stores. This diversity in scale helps to establish a more generalized theory applicable to different business models within the hairdressing industry.

3.3. Data Collection and Analysis

The data for this study is derived from comprehensive reports obtained through government programs, supplied by platform owners and operators of hairdressing companies across four specific cases spanning 2022 to 2023. Each case contributes approximately 20,000 to 30,000 words of detailed paper-based documentation. Additionally, publicly accessible information such as relevant news articles and data from company websites further enrich the dataset. Methodologically, the research team actively engages with digital platforms, participating directly in their usage to ensure a thorough understanding of operational dynamics and user interactions. Analysis and evaluation are rigorously conducted based on firsthand experience with the platforms, supported by ongoing internal monitoring processes, detailed field notes, and continuous formal and informal communications with key stakeholders within the organizations studied. This approach enables real-time capture and interpretation of evolving processes (Kurtmollaiev et al., 2018), providing a robust foundation for the study's findings.

4. Case Briefing

The participants in Taiwan region's chain hairdressing industry platform ecosystem primarily include leading companies, industry peers, and cross-industry partners. The four cases of chain hairdressing groups of varying scales from Taiwan region, as shown in **Table 1**. Industry peers encompass a variety of stakeholders such as company-operated stores, franchise outlets, and independent hairdressers, all of whom contribute to the ecosystem's diversity and reach. Leading companies play dual roles as both front-end and back-end users, actively participating in platform activities ranging from customer engagement to strategic decision-

making. The platform functions as a pivotal intermediary, facilitating critical back-end operations including sophisticated data analytics, promotion of official events, and management of member information for precise and effective marketing campaigns. These roles and interactions are pivotal in shaping the ecosystem's dynamics and fostering collaborative efforts among participants. Below, we detail the specific value activities identified through analysis of four case studies within this ecosystem.

4.1. Group A

Group A was founded in 1966 and became Taiwan region's first hairdressing and beauty business to operate under a franchise model starting in 1978. The group currently owns over 400 branches worldwide and engages in diversified operations including hairdressing and beauty services, plastic surgery and medical aesthetics, hair product procurement, frozen food, and beverage services. Cross-industry partners collaborate with Group A by providing unique products, while Group A offers brand collaboration opportunities. They also offer products, gifts, and trials on digital platforms, increasing exposure and sales data. Industry partners share customer spending and preference data, aiding targeted marketing and customized services through the CDP platform. They promote Group A's platforms and gather customer feedback through LINE@. Industry partners also deliver hair services and retail products, while consumers contribute consumption insights and in-store interactions.

Group A employs a centralized information control model, requiring all its stores to use a standardized platform (mainly supported by the official LINE app) and to upload customer information. Group A uses this information to help industry peers understand their local customer demographics and individual preferences. This helps expand the customer base and maintains store loyalty, reducing the risk of losing customers who are particularly attached to specific hairdressers. This strategy also increases the frequency of repeat visits. The platform creates new channels and sales opportunities for cross-industry partners, allowing them to reach consumer groups that are either inaccessible or inconvenient to contact through physical stores alone. The platform offers convenience and targeted marketing, reducing the volume of irrelevant messages. It streamlines the appointment and service waiting processes, reducing the burden of storing and carrying physical cards (such as point cards and vouchers) and the risk of loss. This overall convenience and risk reduction enhance the consumer experience. Optimize the consumer experience so that the positive emotions generated during the channel experience, particularly enhanced by Taiwan region's chain hairdressing salons, help to sustain continued usage (Nguyen, McClelland, & Thuan, 2022).

4.2. Group B

Group B was founded at the end of 2015, with its headquarters located in Taoyuan. It operates around 160 stores and is currently ranked fifth in Taiwan region's

hairdressing chain system. Its goal is to combine technology (AR and KIOSK) and platforms to enhance consumer experience in beauty and hairdressing services, while also attracting franchisees to expand the scale of its hairdressing business. The group has been awarded the Top 10 International Export Potential Award for Outstanding Brands in the Taoyuan area, Taiwan region. In the Group B platform ecosystem, there are 7 interconnected participants, including consumers, technology companies, industry partners (hairdressing, beauty), and cross-industry partners (foods).

Group B leverages its app to receive real-time feedback from store managers about software usage. This platform serves cross-industry businesses, helping to build a positive reputation and expand future business opportunities. However, there are risks related to the app's usability and performance, such as convenience and smoothness issues. For the beauty, hairdressing, and dining sectors, customer information must be managed with a graded level of transparency. Consumers can provide feedback through platform surveys, engaging in a dialogue about their experiences with the stores. They can also receive benefits such as convenient appointments with stylists and store coupons or reward points. There is a risk of personal information exposure in public domains, increasing the risk of data leakage. Sharing customer information with industry and cross-industry partners can potentially lead to competition and customer poaching among industry peers and ineffective mutual customer attraction among cross-industry partners. The platform must ensure a graded level of transparency for the customer information it manages. Both industry and cross-industry partners can gain insights from customer feedback and hold video conferences. Businesses can make a positive difference by choosing a well-matched partner (Chen et al., 2017).

4.3. Group C

Group C was founded in 1990 and with more than 200 chain stores. In the Group C ecosystem, engineers at Group C conceptualize and develop service platform elements, collecting user data for analysis. They also address technical issues and update systems. Group C provides education and training for platform usage, and designers learn service usage methods through presentations. Designers analyze data to improve hairstylists' strategies and provide feedback. The platform sends back usage data to Group C, while designers use it to create materials for social media. Additionally, the AI service on the platform provides requested materials, which designers utilize to enhance efficiency in managing personal social media accounts.

Group C leverages user feedback to rectify issues and optimize its service platform. By analyzing data on how customers use the platform, they assist hairdressing businesses in formulating better business strategies. The platform collects user data for analysis, with engineers discussing service platform design and structure. They implement improvements based on data analysis, and hair stylists rapidly generate materials for personal brand management using the platform data.

Consumers may face data and privacy security issues. User data and materials uploaded to the AI technology platform are transparent, and Google Analytics is used for semi-transparent tracking and reporting of application traffic data. Members of the ecosystem add new services to it to benefit from shared data resources (Haki et al., 2022).

4.4. Group D

Group D was founded in 2012 and with 19 chain stores. In the Group D designers within the group utilize the platform not only to showcase their work and market themselves but also to manage appointments, promote exclusive products, and increase profit shares. Additionally, senior designers may contribute as instructors on the platform. Individual practitioners and the general public benefit from platform courses for self-improvement and represent a potential talent pool for the group. Collaborating with the Hairdressing Industry Association on the platform leads to promotional efforts, course development, and shared course fees. Non-group designers gain access to platform courses as members, receive links to the group's store for profit sharing, and contribute to the platform's ecosystem.

Group D offers a platform for hairdressing professionals to access online learning courses across different times and locations. The comprehensive learning experience can provide feedback to the platform to supplement faculty or diversify courses. The flexibility of the online learning platform affects the time each practitioner spends learning, as anyone can use the learning platform and its services as long as they are a platform member. Hair stylists can create personal pages to promote one-stop services and self-marketing, gaining additional revenue. However, if stylists do not manage their pages well, it may harm the group's image and the revenue-sharing mechanism. Industry associations or alliances can collaborate through the platform to enhance professional skills and receive course fee revenue sharing. Collaboration with associations influences the group's operations and teaching style, and the transparency of course offerings and revenue sharing remain an issue. Participants can all interact with resources in the ecosystem and synthesize them in a co-creation process (Blaschke et al., 2019).

Table 1. Overview of selected chain hairdressing groups.

Chain Group	Establishment Year	Number of Stores	Coverage	Number of Employees
Group A	1966	500	Hairdressing, Beauty, Plastic Surgery, Hair Products Procurement and Catering	2700
Group B	1998	100	Hairdressing, Beauty	160
Group C	2012	12	Hairdressing, Beauty	300
Group D	1989	11	Hairdressing, Online Courses	25

5. Findings and Discussion

5.1. DART Model for Measuring Value Co-Creation through Digital Platform Ecosystems

In analyzing the value co-creation models of four groups (A, B, C, and D) within Taiwan region's chain hairdressing industry, the DART model provides a structured approach to compare and contrast their strategies and effectiveness. The platform ecosystem offers a more convenient business model (Table 2), enabling participants to achieve their business goals more effectively, increasing revenue and profit. Additionally, the platform ecosystem promotes cooperation and sharing among participants, making resource utilization more efficient, reducing costs, and enhancing benefits. Furthermore, the platform ecosystem provides participants with more market opportunities and customer bases, expanding business scope and strengthening market competitiveness. The active participation of consumers in value creation can facilitate the emergence of creative and integrated value (Vargo et al., 2023).

Table 2. Summary of DART model.

	Group A	Group B	Group C	Group D
Dialogue	Interacts with stores and consumers through operational data collected via the digital platform. Cross-industry partners communicate indirectly via sales feedback.	Receives real-time feedback via the app. Facilitates cross-store and cross-industry meetings via video conferencing.	Uses user feedback to correct issues and optimize the service platform. Discusses platform design and structure.	Provides online learning courses for hairdressing professionals.
Access	Gains accurate, analyzable customer data, store operation data, and product retail information. Increases product reach and sales channels for products used in stores.	AI calculates customer consumption frequency and habits. Convenient appointment booking and cross-industry point sharing.	Uses customer data to quickly generate materials for personal branding and platform usage.	Professionals gain certification and self-improvement on the platform.
Risk Assessment	Manages customer data privacy risks and franchisee backlash. Risks of customer loss to other stores and supplier dependence on channels.	Manages customer data privacy risks. App usability issues may affect customer experience.	Manages customer data privacy risks and platform design issues.	Learning platform flexibility results in varied learning costs and experiences.
Transparency	Controls all information and analysis results, monitors service operations.	Transparency in customer and store information.	User data and platform usage are transparent.	Anyone can use the learning platform and its services.

This study uses the DART model to analyze the value co-creation patterns in Taiwan region's chain hairdressing industry. **Table 3** shows interactive activities and value strategies in a service ecosystem across four groups, covering partner initiatives and consumer services. Group B and Group C can directly communicate with other participants through the digital platform, while Group A and Group D communicate indirectly. Direct communication is more conducive to the acquisition and transparency of information. Based on this, this study proposes the following research propositions:

Proposition 1: *Information acquisition promotes active participation of participants in the value co-creation of the platform ecosystem.*

Proposition 2: *If the leading company can effectively design and manage the four elements of the DART model, it will maximize value co-creation.*

Table 3. Interact activities and value acquisition in the service ecosystem.

	Group A	Group B	Group C	Group D
Industry Partners	Membership information integration, event promotion	Backend management, communication meetings	Personal brand management, improving customer satisfaction and return rate	Online learning platform
Cross-industry Partners	Increasing sales channels, new products	Marketing channels, communication meetings	Data acquisition	Resource-sharing platform
Consumers	Targeted marketing, appointment services	Viewing works, obtaining discounts, appointment services	Diverse experiences, viewing works, appointment services	Viewing works, appointment services

5.2. Diversified Development through Digital Experience Design in Taiwan Region's Chain Hairdressing Industry

Group A has established a systematic Customer Relationship Management (CRM) system, addressing previous issues of scattered information across salon branches and related service providers, redundant customer files, and limited contact information. By unifying customer information collection and analysis through a Customer Data Platform (CDP), they enhance both customer and operational experience. On the consumer end, the official LINE app offers personalized marketing, coupons, and targeted hairstyle design and booking services. At the store level, customer hairstyle photos and purchase records are analyzed to understand hair type, facial features, and style preferences, providing tailored hair design and care suggestions, promotional activities, and discounts. This approach boosts performance and loyalty. For the headquarters, the system fosters better coordination with stores, ensuring consistent brand service and operational guidance. The new platform's design aims to provide valuable data to business operators, cost-effective services to consumers, and reduce manpower issues in retail stores. The

feedback and demand analysis data support an equitable, transparent, and open information-sharing model under data technology (Data technology), benefiting all three parties involved. New technology applications can enhance the consumer experience (Hoyer et al., 2020).

Group B allows customers to link to beauty and hairdressing service providers' official websites through their platform, where they can view designers' portfolios and make appointments, which can be canceled at any time. Appointment and cancellation records are accurately presented in the backend, enabling designers to manage their time more precisely and efficiently, avoiding missed business opportunities due to ineffective appointments. In addition to traditional cash payments, the platform now supports LINE PAY, APPLE PAY, and JKO Pay, making payments more convenient for customers and indirectly increasing consumption. They also use AR games to engage customers, where customers can follow a map to find five partnered stores, scan store signs or designated icons, and receive coupons. This interaction enriches the customer experience and boosts their willingness to spend. Hairdressing, beauty, and dining stores allow customers to earn points for their purchases, and these points are interchangeable among the three types of stores, facilitating cross-promotion. Customers' purchase records and basic membership information are fed into an AI engine for computation and learning. The AI will deduce customers' consumption preferences, habits, and frequency, providing stores with data for targeted marketing messages, achieving precise marketing. The store manager app facilitates backend management, including account reconciliation, coupon issuance and management, member data management, and communication meetings between store managers.

Group C integrates OpenAI's API with Line@ to lower the operational threshold. Designers can easily perform image transformation and text refinement through Line conversations and selections. The image transformation uses virtual portrait models trained by Midjourney, which can be adjusted according to needs. Text refinement results are obtained instantly via OpenAI API requests. This integration not only saves designers time on obtaining materials and post-processing but also improves the quality and exposure of their work. When designers manage their personal brands on social media, they can focus more on skill enhancement, customer management, and work photography. This helps strengthen personal brand management further. AI technology can analyze the data provided by users, including hair quality, needs, and consumption habits, providing valuable information to hairdressing businesses to help them develop more effective business strategies. The use of digital tools and technology will lead to better quality of service (Polaine, Løvlie, & Reason, 2013).

Group D has established an online training mechanism for hairdressing professionals, integrating physical courses with an online digital learning platform to reduce the barriers to training in the hairdressing industry. Traditionally, hairdressing training followed an apprenticeship system, requiring 5 to 6 years of combined schooling and apprenticeship to qualify as a designer. Additionally,

many individuals might abandon the training halfway through and switch careers. The online learning platform, combined with physical technical courses, shortens the learning path for entry-level personnel and provides advanced courses for vocational students and designers in central and southern Taiwan region, offering a learning environment free from time and space constraints. Furthermore, the entry-level courses are open for free to college students, second-time job seekers, or individuals starting their own businesses, serving as a resource-sharing platform. Before the pandemic, most consumers had the luxury of contacting designers directly by phone and did not need to book time slots in advance. However, post-pandemic consumer behavior has changed significantly, with customers preferring to book time slots in advance before visiting the store for service. Consequently, they upgraded the online mobile booking system and established a dedicated platform for designers to showcase their work.

The platform ecosystem offers diversified business models and service content, enabling chain hairdressing businesses to meet the needs of different customer groups, thereby expanding their market size. Secondly, the platform ecosystem promotes cooperation and sharing among various businesses, such as integration with other beauty industries and collaboration on product sales. This allows chain hairdressing businesses to offer more diversified services and products, enhancing their competitiveness. Additionally, the platform ecosystem provides more industry information and market opportunities, helping chain hairdressing businesses understand industry dynamics and trends, better adjust strategies and development directions, and achieve diversified development. Collaboration with external partners is a proven means of helping organizations overcome challenges related to knowledge or resource constraints (Chen, 2020). Based on this, the study proposes the following research propositions:

Proposition 3: *The participation of cross-industry partners contributes to the diversified development of the platform ecosystem.*

Proposition 4: *If the leading company can effectively coordinate the cooperation between industry partners and cross-industry partners, it can expand the platform ecosystem.*

6. Conclusion and Suggestion

6.1. Conclusion

In this study, four cases have established platform ecosystems to adapt to consumer demand changes and the need for diversified development. Responding to the continuously changing environment, the hairdressing industry must possess the flexibility to adapt. By complementing capabilities or sharing resources between enterprises, the goal is to maximize benefits and construct various potential cooperative relationships, thereby reducing the impact of market changes on existing competitiveness.

Efficiency value emergence is also crucial for the digital platform ecosystems. Digital enterprise platforms can create value by increasing operational efficiency.

By maintaining the original resource elements and optimizing platform operations, enterprises, including chain hairdressing salons, can enhance overall efficiency. This includes customer engagement processes, thereby improving service delivery and customer satisfaction.

The value and diversified development brought by the platform ecosystem to participants in Taiwan region's chain hairdressing industry mainly include the following aspects: 1) Enhancing Customer Experience and Satisfaction: Digital platforms enable easier booking, access to hairdressing trends, and hairstylist selection, enhancing customer satisfaction and loyalty. 2) Facilitating Business Innovation and Expansion: The platform ecosystem encourages hairdressing businesses to innovate with new service models, such as personalized designs and product sales, boosting industry value and competitive edge. 3) Promoting Industry Collaboration and Competitiveness: Through collaboration with related industries and resource sharing, the platform ecosystem strengthens industry competitiveness and fosters sustainable development.

6.2. Theoretical Contribution

This study conducted multiple case studies on the integration of technology in Taiwan region's hairdressing industry and compared it across different fields in Taiwan region. By analyzing the practical approaches of case enterprises, this study verified the empirical case analysis results of extending the DART value co-creation measurement framework to different contexts within the beauty and hairdressing industries. We employed an extensive review of literature and practical insights from industry professionals. By doing so, we ensured a comprehensive understanding of how technology integration transforms traditional business practices in the hairdressing sector. Our investigation spanned multiple case studies to illustrate the diverse applications and outcomes of technological advancements in this industry. Peng (Peng, Lu, & Gupta, 2023) study found the mediating role of user involvement in value emergence. This study further discusses the factors associated with user involvement in facilitating value emergence.

We explored new areas of value co-creation, analyzing how case companies build and practice value creation through channels different from the past (Yu & Sangiorgi, 2018; Anshu, Gaur, & Singh, 2022). This involved examining how digital tools and platforms enhance customer engagement, streamline service delivery, and foster a more personalized customer experience. This study brought empirical case studies to the theory of customer experience on digital platforms (Vesci et al., 2020). We considered the coordination effects of various parts of digital platforms, which are novel to the literature on digital platforms (Schiaivone et al., 2021). Our research emphasized the importance of ecosystem coordinators and their activities, particularly the role of ecosystem coordinators (Anderson, Lopez, & Parker, 2022). From the managers' perspective, we discussed value creation in digital platform experiences, encouraging consumer participation and co-creation of service experiences. As a cost-effective method, digital platforms

effectively enhanced store image and improved the ability to provide humanized services through interactions between consumers and stylists (Choi, 2020). We highlighted how these coordinators facilitate interactions between different stakeholders within the ecosystem, ensuring seamless communication and cooperation. By focusing on the strategies employed by these coordinators, we provided valuable insights into effective ecosystem management and the promotion of value co-creation.

6.3. Practical Implications

This study found that establishing a platform ecosystem can help companies more accurately target customers for marketing activities while assisting weaker stores in growth. As stores contribute more complete customer data, the marketing department of the head office can better understand the positioning of store customers, thereby assisting stores in developing marketing strategies to increase customer loyalty and performance. Therefore, actively promoting consumer participation in the platform will help expand the value of the ecosystem. Considering the rapidly evolving market dynamics and competitive landscape, the hairdressing industry must possess flexibility to adapt.

Complementing capabilities or sharing resources between enterprises helps to maximize benefits, which should be considered in objectives. In the process of establishing a platform ecosystem, companies should focus on enhancing customer engagement, use data analysis tools to deeply explore customer behaviors and preferences, and collaborate with other related industries to share resources and technologies. At the same time, they should integrate internal and external resources to form a well-functioning ecosystem. For chain hair salons in Taiwan region, it is helpful to expand market coverage and brand awareness, including through marketing promotions to showcase products and nurture leads, it is crucial to enhance customer engagement by actively encouraging consumer participation on the platform and utilizing data analysis tools to understand and anticipate customer behaviors and preferences. This allows for more targeted and effective marketing strategies, thereby boosting customer loyalty and performance.

Additionally, working closely with related industries to share resources and technologies can provide a competitive edge and offer a wider range of services to customers, enhancing the overall value proposition of the salons. Platform systems that help SMEs reduce operational costs, marketing resources, technical resources, data sharing and analysis, developing a flexible approach to adapt to market changes and evolving consumer demands, integrating internal and external resources effectively, and using comprehensive customer data to inform decision-making processes are all essential. The insights gained from data analysis can help in refining marketing strategies and improving the overall customer experience. Through these strategies, companies can improve customer loyalty and performance, maintain competitiveness in response to market changes, and achieve sustainable development. The flexibility to adapt and the ability to maximize shared

resources are crucial for the hairdressing industry to thrive in a dynamic market environment.

6.4. Limitations and Future Research

This study predominantly emphasizes digital service design, which may not fully address the needs and preferences of all customer demographics. Future research could explore alternative or complementary approaches to service design to cater to diverse customer segments effectively. It is suggested that the differences between traditional concepts and corporate culture can be explored, and research on open, collaborative and innovative corporate culture can be established. In the initial stage of the survey, the data can be divided into the growth stages of the platform ecosystem: the initial stage, the development stage, the growth stage, and the maturity stage, and the data produced after it is easier to evaluate is more valuable for reference.

The rapid production of materials for personal branding through AI technology not only improves productivity, but also saves hairdressing practitioners a great deal of time and cost. The advantages of this service are not only realised in the hairdressing industry, but also have the potential to be extended to other similar sectors. For example, future research in the beauty, medical and fitness centre industries could focus on this area. Because of limited time, this study was unable to include additional cases or conduct cross-country comparisons, which could be valuable areas for future research.

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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