

## How to Achieve Incumbents Thrive in Platform-Based Ecosystem in the Hotel Context: The Role of Digital Complementarity

Yuanzhi, Nan  
Nottingham University Business  
School China  
[bixyn2@nottingham.edu.cn](mailto:bixyn2@nottingham.edu.cn)

Jun, Luo  
Nottingham University Business  
School China  
[Maria.luo@nottingham.edu.cn](mailto:Maria.luo@nottingham.edu.cn)

Martin J. Liu  
Nottingham University Business  
School China  
[Martin.Liu@nottingham.edu.cn](mailto:Martin.Liu@nottingham.edu.cn)

Dandan, Ye  
Nottingham University Business  
School China  
[Wendy.Ye@nottingham.edu.cn](mailto:Wendy.Ye@nottingham.edu.cn)

### Abstract

*While the majority of incumbents struggle with survival, a few thrive against the backdrop of a platform-dominant ecosystem. Recent studies highlight the importance of reconfiguring, especially in a complementary way, to enhance incumbent adaptation and achieve thriving. Scholars have primarily focused on either possessing or accessing resources to enhance incumbent adaptation; however, the understanding of how to reconfigure resources, especially in a complementary manner, remains limited. Based on an in-depth case study in the hotel industry, incumbents with historical roots proactively organize multiple complementarities, thanks to digital technology. This successfully gains committed relationships with customers to outcompete digital giants. This study develops a "digital complementarity" framework to describe the phenomena by which incumbents outcompete digital giants. Particularly, we trace three mechanisms—"digital branching," "digital fortifying," and "data-driven intimating"—and underpin a process model to understand how incumbents achieve successful adaptation to thrive in the platform-dominant ecosystem.*

**Keywords:** Incumbent adaptation, digital platform, complementarities, case study, digital innovation

### 1. Introduction

nology and grown rapidly to become digital giants (e.g., Expedia, Booking, Ctrip, Airbnb). According to Statista's 2022 data, 60% of firms ranked by market capitalization are digital giants. Facing these powerful digital giants, incumbent adaptation—defined as

"assembling a bundle of technological and complementary resources that facilitate the development and commercialization of a new technology" (Eggers & Park, 2018, p. 360)—has become a central conundrum faced by incumbent firms. This is highly associated with their survival and success in the digital economy.

Significantly, incumbents are different from digital giants, who can embrace digital technology without the need for endowed resources. Incumbents have a legacy with regard to digital technologies and business models; such companies are advised to strategically change and restructure their operations (Davenport, 2022). The reality is that incumbents face substantial challenges when embracing digital innovation (Svahn et al., 2017), and the vast majority are on the verge of bankruptcy (Meng et al., 2022). Anecdotally, some incumbents can still innovatively access and use external digital resources and reinforce the value or returns from internal resources to make successful adaptations and thrive. Understanding incumbent adaptation is critical in the context of platform dominance, as it can help incumbents protect their value from imitation to avoid platform displacement threats and identify new opportunities for value creation (Oberländer et al., 2021). Furthermore, an incumbent's failure to adapt also undermines digital platforms' competitive performance because it relies on the timely and high-quality complements provided by incumbents (Ozalp et al., 2018).

According to the incumbent adaptation framework proposed by Eggers and Park (2018), the model includes the possession, acquisition, assimilation, and reconfiguration stages. Existing studies mainly focus on either the possession stage—

where firms that possess relevant resources, such as knowledge, can increase their ability to commercialize technology (e.g., Roy & Cohen, 2017; Sosa, 2011; Teece, 1986; Wu et al., 2014)—or the acquisition and assimilation stage, where experience enhances a firm's ability to access new resources outside its domain (e.g., Cozzolino & Rothaermel, 2018; Rothaermel, 2001; Rothaermel & Boeker, 2008). Less attention has been given to the reconfiguration stage. However, emerging studies are beginning to focus on the reconfiguration stage (Cozzolino et al., 2018; Cozzolino et al., 2021) in response to Eggers and Park's (2018) call, particularly on how incumbent firms engage in resource complementarity.

Understanding resource complementarity—where the value of the system as a whole is greater than the value of its individual components (Baldwin, 2015, p. 2)—is worthwhile. It can create a synergy effect that allows the value generated to exceed the sum of its parts, thereby enabling incumbents not only to survive but also to thrive. This is especially relevant for successful incumbents, as the multilateral structure of the platform ecosystem further motivates platform owners and other complementors to collectively enlarge their joint “pie” (Carmelo et al., 2021). Initial efforts have been made by pioneering scholars who emphasize the essential role of updating synergistic beliefs to achieve complementarity at the cognitive level (Cozzolino & Verona, 2022).

Crucially, with the ubiquity of digital technologies and the infusion of digital innovation (Huang et al., 2017; Nambisan et al., 2017), the interaction between incumbents and digital giants may provide a new avenue for significantly changing complementarity actions. However, the mechanisms and processes of complementarity at the behavioral level remain to be explored. To address this gap, we propose the term “digital complementarity.” This concept refers to the reconfiguration of existing and digital resources to generate additive value, either embodied or enabled by digital innovation. Our study aims to answer the research question: How can incumbents adapt to thrive in a platform-dominant ecosystem through organizing digital complementarity?

Given the limited empirical evidence, this study adopts an inductive theory-building approach based on a single-case study (Eisenhardt, 1989). The hotel industry provides a suitable setting, as most hotels are incumbents with historical roots and are struggling to deal with digital giants. We observe an incumbent hotel in China called Hotel ABC, a hotel chain company with a franchised business model that recognizes itself as a key partner in the digital platform ecosystem. Furthermore, it is the first hotel chain to

officially collaborate with digital giants. Hotel ABC was selected as an extreme case because it not only adapts to the fast-evolving platform-based environment but also outcompetes digital giants.

Our findings contribute to incumbent adaptation literature so far more focused on the “possessing”, and “acquiring” stages, rather than the “reconfiguring” stage, especially in a complementary manner. We also contribute to the process of digital complementarity, which includes “*digital branching*,” “*digital fortifying*,” and “*data-driven intimating*”—mechanisms for incumbent thrive in the platform-dominant ecosystem

To sum up, this study is divided into six parts. Section 2 reviews research on incumbent adaptation and complementarity as theoretical underpinnings. Then, the research method and preliminary results are presented to answer the research question. In Section 5, we propose a process model to illustrate how to achieve incumbent adaptation in a complementary way driven by digital innovation. Finally, we clarify the theoretical and practical contributions and discuss their limitations and directions for future research.

## 2. Theoretical Underpinnings

### 2.1. Incumbent Adaptation

Recent research suggests that to respond to the threat from digital natives, incumbents should access complementary resources (Constantinides et al., 2018; Sorescu & Schreier, 2021). This can help incumbents seize opportunities (Eggers & Park, 2018) and counteract incumbent inertia (Steinhauser et al., 2020). Facing technological change, one key antecedent for incumbent adaptation is complementary resources (Eggers & Park, 2018). This term refers to the resources that a firm needs to successfully commercialize an innovation, such as marketing, competitive manufacturing, and after-sales support (Teece, 1986). Although primary research supports that possessing complementary resources can increase an incumbent's capability to commercialize new technology and increase their motivation to acquire new technology, it poses distinct threats to incumbents in the platform ecosystem context (Sosa, 2011; Teece, 1986; Wu et al., 2014).

Incumbents face platform challenges due to high reconfiguring costs. Although Lee et al. (2010) pointed out that app developers can sustain their superior performance in the iOS ecosystem as industry-level complementarities shift by continuously adjusting strongly complementary product portfolios, the underlying emergent obsolescence and materializing glitches raise

significant burdens for complementors (Hilbolling et al., 2021). Incumbents with physical components and products risk failing to coordinate and lose opportunities to gain knowledge via learning by doing (Parmigiani & Mitchell, 2009). Especially in the platform transition stage, incumbents face increasing costs, such as recruiting new IT employees (Svahn et al., 2017) and making new technology-specific investments (Ozalp et al., 2018). Furthermore, incumbents are unable to organize complementarity simultaneously due to inefficient resource allocation problems, which makes them fail to benefit from superior complementarity. They are constrained by the firm's embedded relationships and prioritize resources for existing consumers and market segments (Christensen et al., 2018), which leads them to continuously invest in incumbent segments and ignore promising new technology.

Overall, we identify two streams of literature to potentially address problems that arise from incumbent adaptation from a complementarity perspective. The first stream stems from the structural perspective, which refers to dominant platforms as orchestrators to manage the division of roles, and co-specialization can contribute value to the whole platform. Platform owners define and develop core components and facilitate complementors to expand the platform's reach and range (Hilbolling et al., 2020; Kapoor, 2018). Predefined interfaces guide complementors to invest in resources, such as specializing in their product portfolios (Tavalaei & Cennamo, 2020) or being supermodularity (Jacobides et al., 2018). However, such a structuralist perspective assumes that complementarity can be known in advance, and is considered as static and exogeneous (Soda & Furlotti, 2017). The second theoretical viewpoint has emerged recently, around resource management for managerial action (e.g., Zeng et al., 2023). For example, positive complementarity is extensively experimentation with customers and ecosystems to update synergist belief (Cozzolino & Verona, 2022) and employee sensemaking of how to leverage resources in their innovation process (Guo et al., 2022) which can strengthen value capture. Furthermore, managerial knowledge and previous experience (Nakata et al., 2011), choices (Kim & Min, 2015), and capabilities (Hullova et al., 2019) are critical for managing complementarity to achieve synergies that benefit incumbent performance. Here, it focuses on the cognitive level but fails to consider managerial behaviour level is equally important.

Although these studies serve as foundations for understanding complementarity organizing, challenges remain over time because of costly efforts (John & Ross, 2022). Furthermore, they do not

challenge the assumption that complementarity causes incumbents to fail to sustain their advantages in the platform ecosystem over time.

## 2.2. Complementarity and Digital Innovation

In recent years, digital innovation has offered new solutions for incumbents to respond to threats from digital giants and bolster their existing advantages. Digital innovation provides the capability to orchestrate physical and digital elements for the generation of new products or services (Yoo et al., 2010). Incumbents from non-digital industries face challenges when embracing digital innovation (Lyytinen et al., 2016). As Huang et al. (2017) define digital innovation as "the recombination of digital components in a layered, modular architecture to create new value-in-use to users or potential users of a service," and Henfridsson et al. (2018) emphasize the agnostic nature of digital resources, merging with a variety of traditional industries causes "convergence." Therefore, resource complementarity driven by digital innovation as an incumbent adaptation strategy may change.

First, digital innovation provides the potential for ongoing development and transformation (Nambisan et al., 2017). The process of complementarity might change from static to iterative when enabled by digital innovation. Characteristics of digital innovation, such as generativity and convergence, involve distributed, heterogeneous external actors (Yoo et al., 2012) and provide abundant opportunities for incumbents to recombine shared resources and experiment with ideas at negligible costs (Oberländer et al., 2021). Specifically, the process may be both conservative and agile due to design flexibility and the negligible cost of modification (Henfridsson et al., 2018). This enables incumbents to branch out and increase flexibility rather than be constrained by physical resources, which tend to be a liability in fast-evolving environments. However, incumbents face challenges in internal development, as it is often time-consuming, uncertain in outcome, and difficult to commercialize physical products quickly. Another option is to access digital platform technology and its related ecosystem; its cross-side network effects provide the possibility of organizing multiple complementarities (Agarwal & Kapoor, 2022). Digital innovation allows incumbents to work on many versions in parallel, rethink new service concepts, and refine previous designs even after the products or services have been launched.

Second, incorporating digital innovation allows incumbents to make better use of existing resources to overcome inefficient resource allocation. With complementarity, complementors share infrastructure,

supporting distribution, marketing, and sales functionality, and accelerate the scope of complementary innovation (Miric et al., 2019). The characteristics of design flexibility and negligible modification costs of digital innovation reduce incumbents' dependence on previous resources, which compete for resource allocation and are likely to resolve resource-prioritizing problems faced by incumbents. In contrast to conventional manufacturing methods that emphasize "nested and fixed relationships" in a modular architecture (Yoo et al., 2010, p. 728), digital innovation increases flexibility for adjusting functionalities, adding supplementary capabilities, or introducing entirely new functionalities over time (Henfridsson et al., 2014) without incurring additional costs. For example, incumbents have employed cloud computing as a one-to-many solution to convert fixed into variable IT costs, producing economies of scale effects and offering flexible customization solutions to intensify relationships (Schneckenberg et al., 2021). The abundant scope of design possibilities furnishes incumbents with ample opportunities to strive consistently for transformational efforts over the entire lifecycle.

To sum up, we term the concept "digital complementarity" as the degree to which incumbents reconfigure existing physical and digital resources to generate additive value, either embodied or enabled by digital innovation. This serves as an adaptation strategy for incumbents. By leveraging digital complementarity, incumbents could potentially branch out for multiple experiments in parallel, familiarize themselves with prospective digital resources, and configure physical resources to complement digital platforms in a flexible and effortless way. There is a paucity of extant literature: leveraging external digital resources provides an alternative way for incumbents to organize complementarity, initially adapt, and then respond to threats from digital giants. The role of digital complementarity in providing capabilities for incumbents to pursue both self-interest and joint values within the ecosystem is not yet fully understood. To fill this gap, this study aims to explore the concept of digital complementarity and address the following research question: How can incumbents adapt to thrive in a platform-dominant ecosystem by organizing digital complementarity?

### 3. Methods

Since the phenomenon of incumbents thriving in platform ecosystems under conditions of platform dominance is poorly understood, a case study

approach is employed for several reasons. First, it is deemed suitable for its exploratory characteristics to understand under-researched phenomena (Siggelkow, 2007). It facilitates a thorough understanding of the process and enables us to address the "how" aspects (Eisenhardt, 1989). Second, the nature of the ecosystem is complex and dynamic and consists of a multilateral set of partners (Adner, 2017). Using case studies with detailed interpretations is more suitable than adopting a quantitative approach for establishing our understanding.

#### 3.1. Research Setting

We chose the hotel industry as an illustration for several reasons. First, the hotel industry is a well-established field with extensive historical roots that have been significantly disrupted by cutting-edge digital technologies, particularly digital platforms (Bahar et al., 2022). Specifically, these digital platforms leverage innovation to attract customers, disrupting hotels renowned for their nearly century-long capability to offer hospitality. Second, the hotel industry involves physical interdependence, meaning that its services cannot be entirely substituted by online alternatives (Bar-Gill & Reichman, 2021).

Given this context, the hotel industry provides an interesting space for us to observe incumbent hotels' diverse complementary activities with different actors across both spatial and temporal dimensions. Third, our data comes from a hotel chain in China, which, for confidentiality reasons, we label as "Hotel ABC." It offers a revelatory case to further our understanding of how incumbents adapt to thrive in a platform-dominant context, where the process of complementarity between dominant platforms and other complementors is observable. Hotel ABC, founded in 2005, initially focused on economy hotels and later expanded to luxury hotels. With an asset-light business model, 92.6% of its properties are franchised. As of 2023 Q1, the company boasts around 200 million loyalty members and has franchised 8,592 offline properties. In a platform-dominant context, Hotel ABC strategically transforms itself into a complementor within the platform ecosystem. This allows us to observe incumbents' diverse complementarity activities with digital platforms. Leveraging digital platform technology, Hotel ABC reports that they achieved continued user growth through piggybacking with dominant platforms. Our study focuses on how Hotel ABC leverages complementary resources from other actors within platform ecosystems to develop integrated value propositions for customers. Therefore, dynamic complementarity can be observed, as complementarity

actions exist over time and involve multiple actors, such as distributors, technical suppliers, and customers.

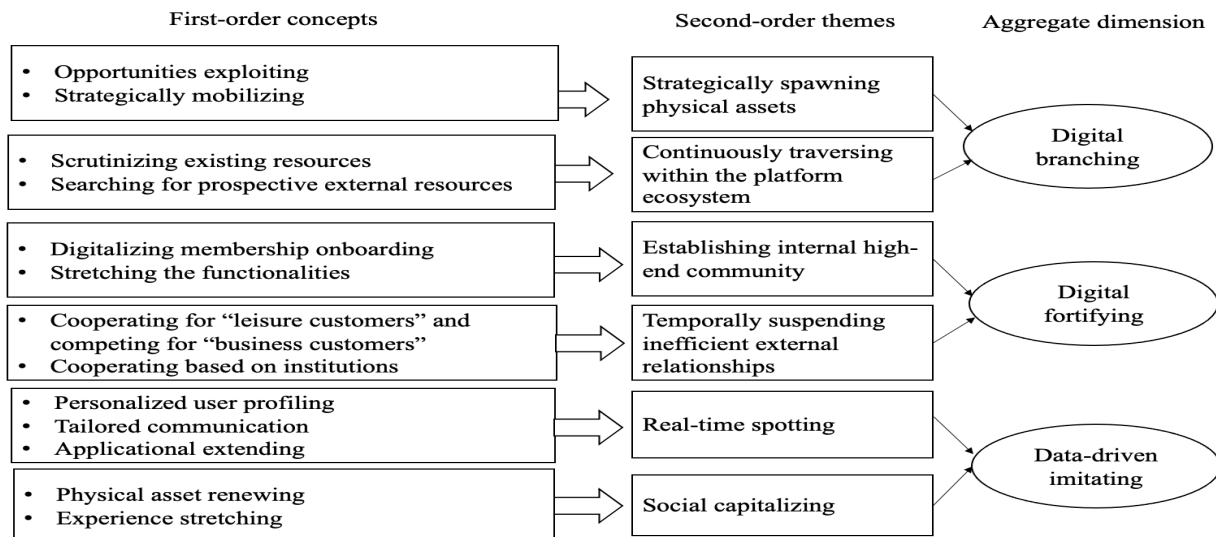
### 3.2. Data Collection

To build knowledge in the platform ecosystem from the incumbent perspective, this study follows the data triangulation method to cross-check the data for construct validity (Eisenhardt & Graebner, 2007). Table 1 shows how these data sources are collected

and contribute to our research question. Semi-structured interviews, archival data, and ethnographic observations are the three main data sources. Archival data are extensively used to help us clarify the historical background and quickly identify the underlying contextual conditions (Henfridsson et al., 2014). In total, we conducted 34 interviews between July 2021 and May 2023; each interview lasted for 60–90 minutes. The purposeful snowballing method was used to recruit interviewees (Biernacki & Waldorf, 1981)

**Table 1. Data sources**

Data Collection	Phase 1 (2021–2022)	Phase 2 (2022–2023)	Phase 3 (2023–Present)
Objective	Exploration of incumbent complementary relationship with digital platforms	Understanding complementarity activity for superior incumbent performance	In-depth analysis of complementarity within product and ecosystem levels
Analytical Tools	Open-ended coding of interviews; identify key events in making the incumbent transition; draft a case narrative	Discussing and confirming with the top manager; coding; visual mapping	Iterating between case data, complementarity theory, and incumbent adaptation literature
Primary Data Sources	23 formal interviews (16 interviews are conducted with incumbents, 5 interviews with digital platforms, and 2 interviews with other service suppliers); 9 daily meetings for observation, including multiple informal interviews (53 pages); 15 online industry meetings and 2 offline industry events		11 formal interviews with the incumbent top management team and digital transformation project team leaders; validating and clarifying findings with interview partners from phases 1 and 2; visit incumbent technology center, informal interactions
Secondary Data Sources	455 pages of news, social media, and industry magazines; 345 pages of public annual reports; 561 pages of industry white papers; 150 pages of documents of partners		
Main Insights	Platform ecosystem strategic reorientation has made incumbents' complementarity activities change iteratively	Complementarity lens to study the evolutionary incumbent adaptation	A process model of incumbent complementarity activities to make an evolutionary adaptation



**Figure 1. Data structure**

### 3.3. Data Analysis

NVivo software assists in our data analysis. Data analysis is characterized as the process of developing inductive theory, following the method of Gioia et al. (2013). Before data analysis, we synthesize all primary and secondary data into detailed, comprehensive case stories. First, we conduct open coding, focusing on the pattern of complementary actions that contribute to an incumbent thriving, which we identify as first-order. We then perform axial coding and generate second-order themes (Corbin & Strauss, 2008). This step enables us to identify variations and merge at a higher level. The final step is selective coding, which is abstracting into aggregate dimensions. We cycle between emergent theory and data to develop constructs. Throughout the analysis, we follow a back-and-forth technique: comparing with existing literature before returning to the data. To sum up, we identify three key processes through which incumbents operate: digital fortifying, digital branching, and data-driven imitating. Figure 1 illustrates our data structure.

## 4. Preliminary Results

### 4.1. The Process of Digital Branching

While managerial activities are essential for resource management (Sirmon et al., 2007), acquiring external resources and integrating internal resources to achieve sequential complementarity does not seem to be applicable in the case of Hotel ABC. Extensive flexibility has become a key feature of branching (Ito & Shimada, 2007). Digital branching describes the process by which incumbents exploit digital opportunities across time and space to expand their niche. This process includes two parts: "strategically spawning physical assets" and "continuously traversing within the platform ecosystem."

Strategically spawning physical assets is a process to offset platform ecosystem appropriation while increasing flexibility to widen the niche. It includes opportunity exploitation and strategic mobilization. "Hotel ABC develops models leveraging e-commerce POI, app CTR, and heat mapping to assist in decision-making on site selection" (releases). This can fully exploit both current and future opportunities forecasted for each branch simultaneously without sacrificing efficacy.

Continuously traversing within the platform ecosystem refers to incumbents persistently leveraging original resources and searching for prospective external resources. Benefiting from data analytic tools, Hotel ABC can select prospective resources based on

multi-dimensional rating systems to ensure transparent product quality. By directly interacting with other actors' resources, Hotel ABC can deliberately reposition itself to gain more platform traffic support. As one of the interviewees mentioned, "Through the platform's backstage, we can see each influencer's profile, such as the number of fans, pricing, and quality of fans, which helps us to produce high-quality content." (interview)

The managerial resource configuration, with multiple experiments conducted in parallel through digital branching, has implications for incumbents within dominant platforms. First, digital branching has shifted from an industry-level exercise (Lampert et al., 2020) to an ecosystem-level activity, as reflected in the case of selectively conducting small-scale trials with other service providers in the platform ecosystem. Second, digital branching enhances the understanding of niche expansion by emphasizing niche widening and niche positioning in a swift manner. Through multiple experiments conducted in parallel, incumbents expand their niche within the platform ecosystem, which is crucial for adapting to the platform ecosystem and thriving.

### 4.2. The Process of Digital Fortifying

Digital fortifying describes the process by which incumbents rebuild and reconfigure complementary assets to continuously make improvements for capturing value through digital innovation. This process includes two components: "establishing an internal high-end community" and "temporarily suspending or postponing inefficient external relationships."

Establishing an internal high-end community refers to the process of selectively onboarding and quickly expanding the functionalities in use. Hotel ABC, on the one hand, connects its customer relationship management system API with multiple external platforms. As one of the interviewees stated, "User experience is an important factor in improving customer acquisition efficiency. Platform customers can enroll in our membership within a few seconds with the help of direct connection techniques." (interview). Unlike traditional models with lower membership enrollment barriers, Hotel ABC restricts enrollment conditions and increases membership benefits that customers value. "Customers need to complete 40 nights within the past year to maintain their Gold membership but can experience more than 20 exclusive benefits," (releases) according to the official website. On the other hand, Hotel ABC-affiliated hotels serve as offline sources for community enrollment portals with centralized control. Furthermore, a variety of functionalities can be quickly expanded with the support of a digital core.

Temporarily suspending inefficient external relationships refers to the process of cooperation based on the premise of institutions cooperating for "leisure customers" and competing for "business customers" with real-time monitoring. Hotel ABC publicly suspended supplying rooms on three digital platforms in 2015 because those platforms subsidized their customers. The expected outcome was to protect their priority concerning loyalty member system regulations. To safeguard their distribution channels, Hotel ABC invests in algorithms to monitor third-party channels and set alarms to ensure each yield manager can check and protect their price in real time.

Essentially, the concept of fortifying is related to managerial practices designed to protect the value of resources, such as human resources (Comer & Sekerka, 2018). Unlike approaches that emphasize protection from change, digital fortifying involves incremental adjustments and improvements to complementary assets to increase incumbent adaptability.

### 4.3. The Process of Data-driven Intimating

Data-driven intimating describes the process by which incumbents continuously improve customer service by leveraging data synergies. The process includes three parts: "social capitalizing" and "real-time spotting."

Social capitalizing refers to the process of incumbents renewing physical assets and stretching experiences. Hotel ABC repositions the offline portal as an opportunity to gain user traffic through warm greetings, special treatments, status recognitions, and personalized recommendations to arouse emotional connections. Digitalization transfers the offline customer experience with the portal into a digital experience with Hotel ABC, forming highly addicted loyal customers.

Real-time spotting means that incumbents can develop user profiles at the data level and tailor communications. A customer data platform provides incumbents with abundant customer information by integrating first-hand data, such as user participation data, transactional data, and preference data, as well as third-party data, such as customer satisfaction indexes and market data. This information can be distributed to other entities, such as affiliated hotels, partners, and other service providers, in real-time for customized service provision.

Acknowledging customers as resource providers and recognizing the importance of their relationships are critical for the entire service ecosystem (Lusch & Nambisan, 2015). While some initial studies have focused on digital giants leveraging customer complementarity to diversify their business (Aversa et

al., 2021), we observe Hotel ABC as an incumbent developing data-driven intimating relationships with users to transfer their offline relationship with centralized control.

## 5. Discussion

Figure 2 illustrates the process model. With the unique characteristics of digital innovation, such as malleability and generativity (Nambisan et al., 2017), digital innovation enables incumbents to fortify complementary assets. This is achieved through the reuse of existing complementary resources, leading to ceaseless improvements that bolster data-driven initiatives. Furthermore, digital innovation affords automation capability, allowing incumbents to track and monitor information in real-time to ensure digital branching continuously supplements existing complementary assets.

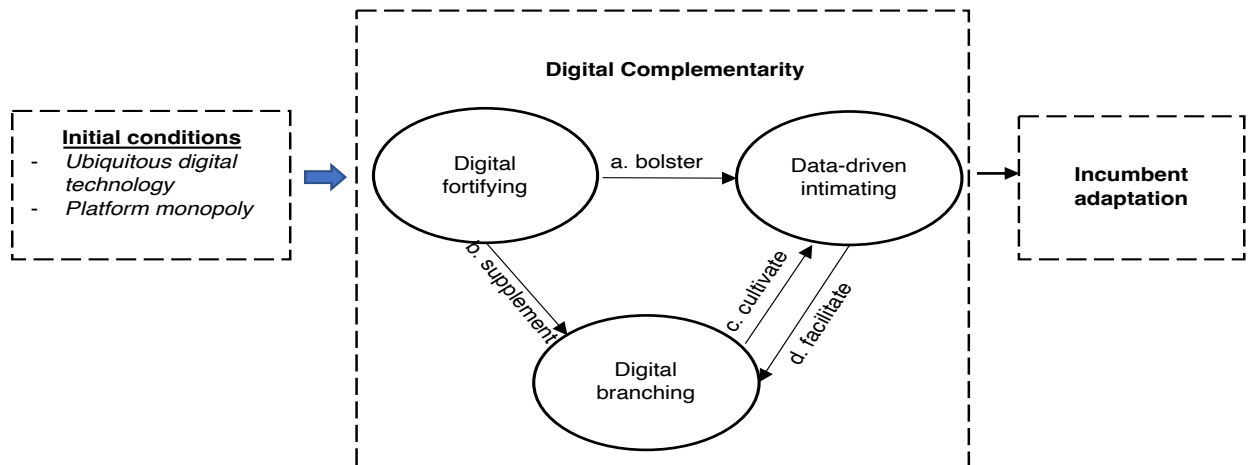
**Proposition A:** Digital innovation enables digital fortification to bolster data-driven imitating through establishing an internal high-end community.

**Proposition B:** Digital innovation enables digital fortification to supplement digital branching through real-time monitoring.

In addition to the existing resources causing tensions between "old" and "new" (Svahn et al., 2017), as depicted in previous literature, digital resources can play a dual role as both operant and operand resources (Lusch & Nambisan, 2015). This provides incumbents with an alternative route for reconfiguring endowed resources to leverage digital opportunities. Digital branching offers a set of solutions for established firms to create opportunities. Challenges may arise in the availability and quality of datasets required for opportunity identification, potentially affecting the effectiveness of predictions. Given that the characteristics of the hotel industry involve relatively high prices and low-frequency consumption, first-hand data is limited. This has led Hotel ABC to proactively source data from third-party platforms. The hotel industry benefits from data quality due to policy requirements. The larger and more accurate the dataset, the greater the benefits of cultivating data processing and modelling abilities. By enhancing the database used for training machine learning and model testing, digital branching cultivates data-driven imitating.

**Proposition C:** Digital branching cultivates data-driven imitating by testing multiple models through strategically spawning physical assets and continuously traversing for opportunity identification.

Drawing on design flexibility and malleability (Kallinikos et al., 2013), digital innovation enhances customer services by increasing predictability through



**Figure 2. The process of digital complementarity** real-time spotting, and social capitalizing to enhance incumbent adaptation. In our case, big data analytics tools help Hotel ABC assess each opportunity and make informed business decisions. Predictive algorithms allow for the tracking of relationships in real-time and the analysis and prediction of demands, providing benefits not only for increasing efficiency but also for maximizing customer satisfaction on a large scale. Through continuous experimentation, incumbents can extend the scale of recognized opportunities without incurring financial expenses. Although digital branching provides incumbents with multiple digital options, challenges arise in identifying the complementarity that best fits the context of value-in-use. Through real-time spotting and social capitalizing, the outcome of data-driven imitating reinforces digital branching for resource-sharing partners of incumbents. A main assumption in previous literature was that incumbents with endowed resources are hesitant to reallocate resources due to the fear of losing their current customer base (Christensen et al., 2018a). Therefore, scholars have typically focused on updating managers' beliefs and changing their mindsets (Kim & Min, 2015). Our case indicates that endowed resources can help incumbents thrive over time rather than being a liability. With the accuracy of customer data predictability, combined with social capitalizing, incumbents are guided toward actualizing multiple opportunities.

**Proposition D:** Data-driven initiatives reinforce digital branching by affording real-time spotting, and social capitalizing, enabling incumbents to actualize multiple opportunities.

## 6. Potential Contributions and Future Research

Overall, this study contributes to the literature on

digital innovation, the theory of complementarity, and incumbent adaptation. Our study highlights the critical role of digital innovation in creating "digital complementarity" in an agile and lean way.

The process of digital complementarity enables incumbents to engage with multiple complementarities, whereas previous literature has focused on one-to-one complementarities, such as choosing a partner with complementary resources (Kim & Min, 2015) or investing in a technically chosen direction (Wu et al., 2014). Specifically, when incumbents access digital infrastructure effortlessly, abundant economic and relational opportunities can help to rapidly commercialize products. Positive synergies reinforce incumbent adaptation, entering into a virtuous cycle. This challenges the existing complementarity literature that focuses on individual characteristics like managerial working experience, skills, and tacit knowledge in embracing innovation (Hullova et al., 2019). Our study complements this with a technical solution, reducing reliance on specific human experts.

Due to the reprogrammability and malleability of digital technology, incumbents can reconfigure resources in an agile manner without being constrained by endowed resources. This allows incumbents to conduct parallel experiments to learn from adjacent digital platforms, thereby shortening incumbent adaptation time. Previous studies have focused on the challenges organizations face in terms of the time and costs required to reconfigure new resources for complementarity (Stiglitz & Heine, 2007; Lee et al., 2010). Second, past literature less attention has been paid to the reconfiguration of resources, especially in a complementary way. Pioneering scholars have attempted to update synergy beliefs to reach complementarity at the cognitive level (Cozzolino & Verona, 2022). Our study complements this with a behavioural-level solution to facilitate incumbent adaptation. Third, we depict the process by which



incumbents can reconfigure resources in a manner driven by digital innovation to adapt and thrive in the digitized world.

Practically, our work has implications for incumbent managers, who can reference the mechanisms developed by this study to achieve adaptation in a platform-dominant ecosystem. Through organizing complementarities, incumbents can benefit by using complementary product portfolios to reposition themselves, sustain their competitive advantages, and increase bargaining power. However, since incumbents are making autonomous decisions that are hard to envision, they may limit the growth of the entire ecosystem and even undermine its viability (John & Ross, 2022). Platform owners should also focus on how to develop long-term relationships with customers to maintain their first-mover advantage (Varadarajan et al., 2008).

This study's limitations can provide opportunities for future research. Despite the single case is more profound for in-depth understanding on emergent phenomenon (Yin, 2018), some explanations are context-specific, which may limit generalization to different contexts (Siggelkow, 2007). Further research could adapt this study to different settings to increase external validity. Given that China has some powerful digital platform leaders who provide digital infrastructures for multiple non-digital firms, thereby lowering their innovation costs and accelerating their innovation speed in the digital economy (Wu et al., 2022), the explanations in this study may not be applicable to other low-digitized economies.

## Acknowledgement

This research was supported by National Natural Science Foundation of China (Grant No. 72101131,71972112) and Zhejiang Soft Science Programme (Grant No. 2022C35003).

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