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New Venues for Collaborative Business Model Innovation Through Ecosystems

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Introduction

The financial service industry is facing a significant change. Digital transformation enables firms to innovate the industry's fundamental business model along the customer journey, erasing traditional industry borders (Catlin et al., 2018). While customers were loyal to their financial service providers in the past, today, we see hybrid customers using several banks and insurance companies simultaneously. It is not atypical for customers of banks like Citi or HSBC to use PayPal, Apple Pay, or Google Pay for their transactions while at the same time trading shares using Fidelity,

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Interactive Brokers, or Robinhood. The point of sale for insurance policies has primarily moved from traditional insurance companies to search platforms (e.g., The Zebra), transaction platforms (e.g., Amazon), or retailers (e.g., Walmart). Digital transformation has changed how firms operate on multiple fronts—internally, with their customers, and with external organisations (Bloomberg, 2018). Thus, the digital transformation changes the game of the financial service industry along three dimensions: technology, customer service, and market. The disruption changes processes, products, services, and, ultimately, the entire financial service ecosystem.

The ecosystem perspective matters for business models, as collaborations increase among different firms and industries. The digital transformation is the decisive enabler in this context, as it reduces transaction and coordination costs between companies and promotes new collaborations. These collaborations transform the existing relationships between firms and create new business opportunities. Such alternations always change at least one constituent element of existing business models, i.e., the value proposition, value chain, or profit mechanism (Gassmann et al., 2020), leading ultimately to business model innovation. For example, mobile payment is a new offer towards the bank customer, whereas big techs represent new entrance impacting the existing business model of payment schemes. Contrary, the big techs' ecosystems offer new opportunities for diverse firms to expand their business models: retailers can leverage customer data, newspaper can offer new subscription models or financial service provider can built on the app economy to tackle traditional banking. Ecosystems can be considered as a system of aligned and integrated business models (of individual firms) for creating new or better value propositions along the customer journey. Therefore, the ecosystem perspective is central to business model innovation, whereas digital transformation serves as the enabler.

Digital transformation fosters new technologies, including platforms that improve connectivity among different actors. Simplified collaboration is essential for new business models. Today, most individuals carry mobile phones with them at almost all times. Whether their phone's operating system is Google's Android or Apple's iOS platform, individuals use the apps on their phones to access products and services from

various firms. At the same time, user data is generated and collected. This data allows app providers to analyse their customers. For instance, eBanking platforms already summarise spending into categories—like food or leisure activities—allowing financial institutions to conclude the individual's retailer or service provider preferences. Customer data is a new resource that will play a fundamental role in engaging technologies like machine learning, as data is necessary to train algorithms. Last but not least, new technologies like blockchain enable innovations like smart contracts, whose potential cannot be fully estimated (nor imagined) yet.

The technological progress resulting from digital transformation also affects the customer by triggering changes in consumer behaviour. Physical touchpoints between customers and their financial advisors are reduced by digital channels, through which customers seek to have their demands fulfilled directly. Customers can access their accounts 24/7 online, no longer needing to wait for a letter to check their account balance. Customers are looking for such convenience; however, the more accessible service becomes for the customer, the harder it is for a single bank to address the demands. Customers no longer demand single products or services, like a mortgage or payment at the gas station. Instead, customers demand comprehensive solutions to their needs, e.g., finance, housing, or mobility. In short, customers want an easy-to-use, one-stop solution. Due to application programming interfaces (APIs), transaction costs for collaboration have decreased; this has enabled cost-effective bundling of products and services to suit these new customer needs.

These technological and customer behaviour changes have profoundly impacted markets and firms' business models. New opportunities deriving from digital transformation are fuelling the industrialisation of the financial service industry. New competitors have entered the financial service value chain. Start-ups like Revolut and firms from other industries like Apple pose a challenge to incumbents. Additionally, regulations such as the European Union's Revised Payment Services Directive (PSD2) encourage border crossings and simplify market access for third-party providers. This promotes cross-company processes and forces financial service providers to collaborate with partners within and outside the

financial service industry. Finally, these developments also allow financial service providers to position themselves in new verticals outside the finance market, such as housing or mobility.

To understand the effects of digital transformation described above, the dimensions cannot be considered in isolation (cf. Rosenberg, 1979). Technologies stimulate both customers and the market, which ultimately drives further innovations. Due to the interconnectedness between customers, market, and innovation, the effects of changes to one impact the other, and the dimensions co-evolve together. To understand this phenomenon, the ecosystem concept (Moore, 1993) serves as a suitable lens: put simply, ecosystems focus on the interdependencies among actors and the way they co-create value for the customer.¹

This chapter is structured as follows. First, we present two illustrative cases of financial service ecosystems. Second, we adopt an academic lens to explain the ecosystem concept and link its characteristics to the cases presented. This section also focuses on different ecosystem designs and success factors before summarising the ecosystem concept by evaluating its strengths and weaknesses. The section ends with highlighting the implications for business model innovation. We then provide three exemplarily use cases for ecosystems in the financial service industry, followed by five trends explaining why ecosystems will gain relevance in the future. Next, we present the avenues for research with an emphasis business model innovation. Finally, we conclude the chapter with recommendations for practitioners on ecosystem participation.

Ecosystems as Part of the Financial Service Industry

Ecosystems are not new to the financial service industry. Card payment systems like American Express, MasterCard, and Visa are well established and considered ecosystems (Gawer & Cusumano, 2014). Although not

¹ Hereby we do not restrict the ecosystem concept to B2C business, as the concept is also demonstrably useful when applied to B2B business (cf. Aarikka-Stenroos & Ritala, 2017). Additionally, knowledge and entrepreneurial ecosystems are beyond our scope as their output does not focus on the customer directly (Thomas & Autio, 2020).

generally a new concept in the financial service sector, ecosystems present a new lens for looking at value co-creation among different actors. The independent actors co-create value for the customer interdependently. Digital transformation, in particular, boosts such collaborations. On the one hand, digital transformation creates new opportunities and enables novel business models (Gassmann et al., 2020). On the other hand, digitisation can also automate coordination efforts, resulting in lower transaction costs (cf. Williamson, 1979). This, in turn, simplifies and ultimately fuels collaboration between businesses.²

The existence of ecosystems is a fact. The term's occurrence is skyrocketing in corporate and industrial news (Kapoor, 2018); it has especially gained importance in the financial service industry in recent years (cf. Fig. 3.1). Practitioners agree that the dominant industry logic will fade away as ecosystems rise, the latter providing related products and services for customers (Atluri et al., 2017).

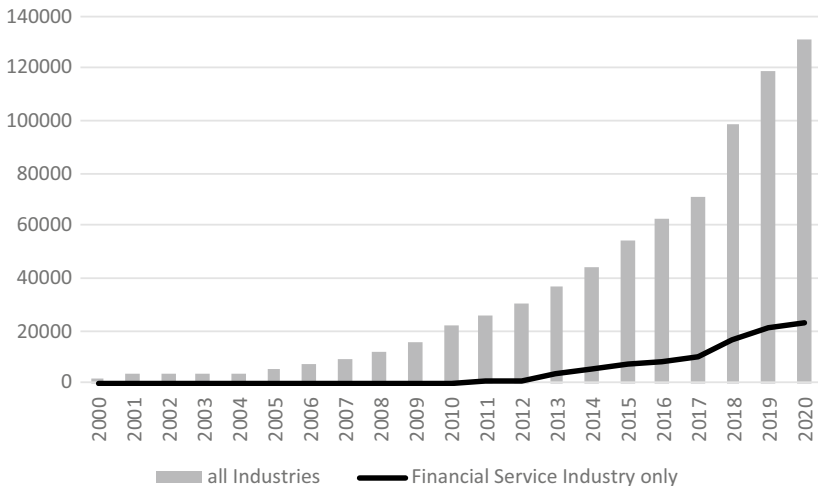


Fig. 3.1 Number of articles mentioning “ecosystem” in corporate/industrial news (*Data Source Factiva*)

² At this point we would like to point out that digitalization is not a necessary condition for ecosystems. A simple and well-known example of a non-digital ecosystem is Nespresso (Jacobides, 2019).

Moreover, ecosystems will continuously evolve within the financial service industry due to the ongoing digital transformation, as demonstrated by Palmié et al. (2020). This trend of interdependence affects financial service providers in conflicting ways. Their traditional positions face pressure due to changing technologies and consumer needs; at the same time, however, the transformation also enables them to reposition themselves in value chains outside traditional industry boundaries (Gasser et al., 2017). This section provides two illustrative examples of financial service providers, Ping An and Twint, which indicate how ecosystems can evolve and what they may look like as the digital transformation continues to spur changes.

Ping An Ecosystems

Ping An is a Chinese financial service conglomerate. Peter Ma founded it in 1988 as a property and casualty insurance provider. Within the 33 years since its founding, Ping An has become the leading insurance provider³ on the Forbes Global 2000 list (Gara, 2021). This rapid growth did not rely simply on the firm's insurance business—which was expanded to offer life (in 1994) and health insurance (in 2005)—nor its entering the banking business (in 2003), the latter expansion making the firm a financial service conglomerate. Instead, its success lies in Ping An's ecosystems.

Ping An has genuinely mastered digital transformation. Inspired by the possibilities of digital technologies—impressively demonstrated by other successful Chinese companies like the Internet firm Tencent and e-commerce platform Alibaba—Ma took the chance to jump on this trend. It was a risk, as insurance companies were hardly involved in digital technology at the time, but Ping An's digital transformation paid off.

Ping An digitised its core business for the first step in its transformation by establishing end-to-end online channels and back-end processes. At the same time, the financial service conglomerate integrated new

³ Berkshire Hathaway is also an insurance business but is categorized (by *Forbes*) as “Diversified Financials” (*Forbes*, 2021).

services adjacent to its core business. These included doctor's appointments in addition to health insurance, providing automotive-related information for customers interested in buying a car, including the purchase payment related to the banking pillar and car insurance as a product of the insurance pillar.

These actions mark the firm's first steps towards developing ecosystems. In short, Ping An built platforms that took a customer-centric approach by serving customer needs rather than selling products (cf. Levitt, 1960). These platforms, e.g., the Good Doctor app and Auto-home website, can be regarded as "one-stop-shops," enabling Ping An to expand its reach along the customer journey. Step by step, Ping An integrated more services and partners (e.g., hospitals and doctors, car dealers and repair shops) to better serve customers' needs. The firm established multiple ecosystems by connecting its partners and aligning those offers. As of 2020, Ping An runs four ecosystems: financial services, healthcare, auto services, and smart city.

Ping An's success story doesn't end there. The conglomerate enforced a one-account policy across its ecosystems, leading to 598 million users by December 2020 (Ping An, 2021). By engaging digital technologies such as artificial intelligence (AI), cloud computing, and the Internet of Things (IoT), Ping An could analyse its customers' and partners' data in more detail and across its ecosystems. This enabled better integration of Ping An's three core pillars—banking, insurance, and wealth management—in three ways. First, by using new leads to determine which services to offer, car buyers, for example, are automatically offered car insurance. Second, by providing the clients with more sophisticated value propositions, such as a dynamically priced car insurance policy based on their driving behaviour. Third, using the interdependencies of the core pillars to profit from synergies between the different ecosystems, e.g., because car buyers are likely to use the financial service ecosystem to buy their car or pay for repairs. Thus, Ping An created a virtuous cycle in which its core businesses (banking, insurance, and asset management) and ecosystems reinforce each other.

Twint Ecosystem

Twint is the dominant mobile payment app in Switzerland. The eponymous FinTech was founded in 2014 as a spin-off of a retail bank. Twint aimed to provide a payment solution that could be used on mobile phones. At the same time as Twint's founding, other Swiss companies launched their payment applications. Two Swiss retail banks and a financial infrastructure provider teamed up to launch a payment app focusing on peer-to-peer transactions (payments for retail were to follow later), and a telecommunications firm launched another mobile payment solution. Three mobile payments apps were too many for Switzerland, a small country of 8.5 million inhabitants. Accordingly, the first consolidation occurred in 2015, when the telecommunications firm abandoned its app and joined the banks' initiative for peer-to-peer payment. A year later, in 2016, this initiative merged with Twint, whose name mobile payment solutions with integrated peer-to-peer payment continues. In the wake of the COVID-19 crisis, Twint has experienced impressive growth; as of October 2020, the mobile payment solution reported more than three million users, representing 35% of the Swiss population (Dietrich & Wernli, 2021; Twint, 2020).

Twint didn't build its ecosystem by focusing directly on the end customer like Ping An did. Instead, Twint built it by focusing on the business partners involved. Banks, as well as retailers, were convinced that mobile payment would gain importance in the future. In Switzerland, payments are mostly made by cash or debit cards; only a few customers use credit cards. Mobile payment solutions, especially international systems such as Apple Pay, are often based on deposited credit cards. Because credit cards have higher commission fees than debit cards, global mobile payment solutions dissatisfied Swiss retailers. Thus, existing mobile payment systems were unsuited for the Swiss market. Twint took advantage of this issue and aligned with retailers using two strategic solutions. First, Twint offered transactions with lower commission rates than credit cards. Second, Twint integrated loyalty cards into the payment system—which are seldomly integrated directly into the payment process of international mobile payment systems—if demanded

by merchants. Correspondingly, Swiss retailers started integrating the new payment system into their cash registers.

Its merger of the two mobile payment solutions cemented Twint as Switzerland's mobile payment standard. This establishment led to the onboarding of other banks, which ultimately integrated further customers. Only two banks offer the payment app themselves, in contrast to the majority that rely on a white label solution from a telecommunications firm. The latter takes the technical specifications from Twint, which operates the platform as the ecosystem's infrastructure.

This infrastructure has continuously expanded. Initially, the interface between the cash register and mobile phone relied on Bluetooth. This technological interface required modifications of the cash register on both the hardware side (installation of a beacon) and the software side (integration into the cash register's operating system). Twint enforced its QR code payment process to overcome those high integration costs, initially developed for online store payments. Twint, with the support of major banks, successfully pressured the local financial infrastructure provider to integrate the QR code payment solution into its card terminals. Near-field communication (NFC) was not an option due to Apple's restriction for third-party app providers. Accordingly, Twint's QR code solution on card terminals attracted more retailers and other service providers (e.g., restaurants, hairdressers), allowing them to adopt the payment system easily. This is because most service providers have a card terminal in Switzerland.

New applications of Twint include payments for parking meters and the integration of charity organisations for donations into the app. Thus, Twint has provided banks with new touchpoints in customer journeys; it has positioned banks into new verticals such as retail or mobility through the constant innovation of its payment interface. In this way, Twint represents another successful financial service ecosystem example.

Ecosystems as a New Concept for Value Co-creation

While the ecosystem terminology is well established in practice (cf. Fig. 3.1), the term has also gained increasing attention among scholars. This has resulted in a boom in recent years (Jacobides et al., 2018). Moore (1993) introduced the ecosystem terminology into the management literature. He chose this term to emphasise the mutual interdependence among actors by analogy to nature. Due to this metaphorical introduction, the ecosystem concept lacked a rigid conceptualisation. This shortcoming ultimately raised concerns about the *raison d'être* of the ecosystem concept in academia (cf. the debate between Oh et al., 2016; Ritala & Almpantopoulou, 2017). Although the ecosystem concept was vague and ambiguous in its early application, it has finally established itself in academic business literature (de Vasconcelos Gomes et al., 2018; Granstrand & Holgersson, 2020; Hou & Shi, 2021; Scaringella & Radziwon, 2018; Tsujimoto et al., 2018).

Scholarly Perspectives on Ecosystems

Ecosystems are studied from different analytical angles, i.e., by focusing on different units of analysis, such as the whole ecosystem or a single actor within, and different research emphases. Based on the latter, the literature can be divided into three streams of research: business, innovation, and platform ecosystems (Jacobides et al., 2018; Thomas & Autio, 2020). Business ecosystem research (e.g., Iansiti & Levien, 2004; Rong & Shi, 2015; Teece, 2007, 2018) focuses on an individual actor (e.g., firms or institutional organisations) and how it manages the dynamics within its community. Innovation ecosystems (e.g., Adner & Kapoor, 2010, 2016; Jacobides et al., 2018; Lingens, Böger et al., 2021a) focus on value creation among actors, i.e., how specialised actors collaborate in the ecosystem and contribute to a focal innovation as complementors (c.f. Nalebuff & Brandenburger, 1996). Platform ecosystems (e.g., Cennamo & Santaló, 2013, 2019; Gawer & Cusumano, 2014; Wareham

et al., 2014) focus on managing interdependencies between the platform sponsor and the complementors.

While each of these streams differs in its research emphasis, the business, innovation, and platform ecosystems streams overlap (Jacobides et al., 2018). Regardless of their specific labels (which are becoming less widely used; c.f. Adner, 2017; Jacobides et al., 2018; Thomas & Ritala, 2022), all ecosystems have three characteristics that differentiate the concept from the related research approaches of interdependence and value creation.⁴

First, ecosystem actors must align themselves with materialising the value proposition for the final customers (Adner, 2017; Thomas & Autio, 2020). Referring to the first example above, Ping An needs to align the healthcare ecosystem's participating physicians and medical institutions (e.g., hospitals) as complementors to generate synergies and, ultimately, create superior value for the customer. For example, medical service providers need to be integrated into the Good Doctor app by Ping An, while the service providers must adapt their processes to the app.

The second characteristic of ecosystems is their foundation on non-generic complementarities. The identification of this characteristic, an essential contribution by Jacobides et al. (2018, see also 2020), highlights a unique feature of ecosystems: their complements must be adapted explicitly towards each other. These specific adaptations could be supermodular or unique. In either case, these adaptations require a minimum threshold of customisation and thus investment. This ultimately means the components are not entirely fungible. As shown by our other example, Twint, retailers had to provide an initial investment to participate in the ecosystem—whether the earlier cash register upgrades (Bluetooth beacon and software adaptation) or, later, enable (financial infrastructure provider) and accept (retailers as merchants) the scheme on card terminals (QR code on display).

⁴ We do not discuss the differentiation of ecosystems from related forms of interdependence and refer to Adner (2017) for a general overview. Literature also discusses the similarities and differences between ecosystems and associated forms of interdependence in detail, e.g., on alliances and supply chains (Jacobides et al., 2018), networks (Shipilov & Gawer, 2020), and platforms (Altman & Tushman, 2017; Jacobides et al., 2020).

Similarly, banks and their software providers had to develop interfaces for the Twint platform's transaction processes. In these cases, the complementarities (the retailers and the banks) rely on supermodularity (Topkis, 1978, 1998; cf. Milgrom & Roberts, 1990). In a supermodular adaptation, two independent components become more valuable as they reinforce each other; in these examples, the added values were more options for payment at the cash registers and more functions for bank customers. Other complements are unique to the ecosystem, such as the Twint app. The app was solely produced to participate in the Twint ecosystem. It cannot be used for other payment systems such as Apple, Google, or Samsung Pay. The incomplete fungibility of the ecosystem's components is demonstrated by the fact that both types of specific complementarities, supermodularity and uniqueness, require specific investments to align with the corresponding ecosystem (Jacobides et al., 2018).

The third and last unique characteristic of ecosystems is that its actors must identify with the ecosystem (Thomas & Ritala, 2022). Ecosystem actors remain independent despite their interdependence (Gulati et al., 2012); accordingly, they are neither unilaterally controlled nor hierarchically managed (Jacobides et al., 2018). Instead, actors pursue different goals and have mutual understanding, i.e., actors consciously self-identify as part of the ecosystem but do not (necessarily) follow a shared understanding, e.g., of their role in the ecosystem. The minimum requirement for the actors' identification with the ecosystem is that they share the understanding that the community exists and that they are part of it (Thomas & Ritala, 2022). In our examples of Ping An and Twint, the partners in both cases understand their membership in the ecosystem as an additional distribution channel (compared to non-ecosystem actors) or differentiation mechanism (from competing ecosystems) rather than believing that they contribute to a dominant system for healthcare or mobility, or that they are part of the digital wallet.

Figure 3.2 visualises an exemplary ecosystem. The arrows between the actors show the alignment structure, i.e., that the actors align themselves with each other. This alignment can be established either directly, between actors, or indirectly by affiliation (Adner, 2017; Altman &

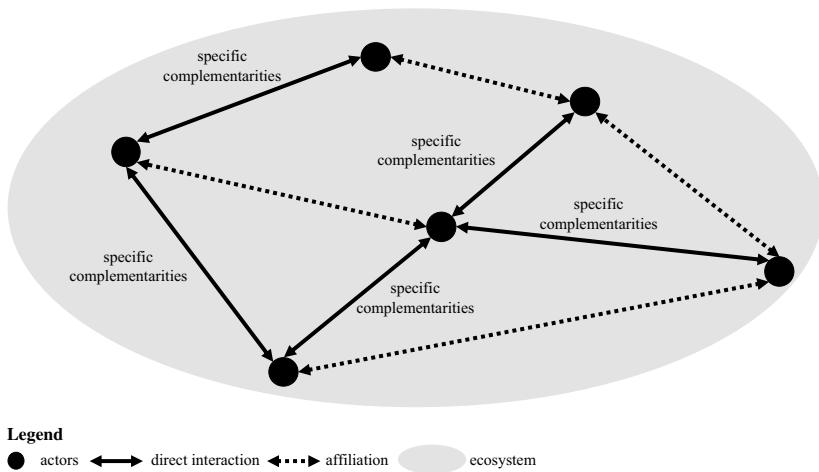


Fig. 3.2 Schematic illustration of an ecosystem (based on Altman & Tushman, 2017)

Tushman, 2017). Alignment is required as the complementors provide specific complementarities (supermodular or unique) customised for the respective ecosystems (Jacobides et al., 2018). The grey area indicates the ecosystem to which the actors belong. These actors know that the ecosystem exists and identify themselves as part of it (Thomas & Ritala, 2022).

Success Factors for Ecosystem Management

Ecosystems are complex groupings that can be designed in different ways. In the following, we point out design options and success factors. Which option is the right for a firm and its ecosystem strategy depends on each firm, ecosystem value proposition, and ecosystem community; there is no “one-size-fits-all” approach.

To establish an ecosystem, one actor can take the lead. In this case, the actor is referred to as the ecosystem’s orchestrator. The orchestrator recruits, complements, and integrates them into the ecosystem. Such leadership is beneficial to accelerating the ecosystem’s emergence as its

development is directed towards the orchestrator's goal (Williamson & de Meyer, 2012).

Most of the literature in both practice (e.g., Atluri et al., 2017; Catlin et al., 2018; Tang et al., 2018) and research (e.g., Adner & Kapoor, 2010; Dattée et al., 2018; Thomas & Ritala, 2022) focuses on ecosystems led by a single orchestrator. However, empirical research has also shown that multiple orchestrators can jointly lead an ecosystem. This approach is recommended for exploratory ecosystems. In these ecosystems, the value proposition requires knowledge from various domains. One actor can hardly build this type of ecosystem on its own and thus needs to engage in outside-in innovation processes (Gassmann & Enkel, 2004; Lingens, Miehé et al., 2021b). Further, ecosystems may also emerge without a leading orchestrator (Ozcan & Eisenhardt, 2009; cf. Altman & Tushman, 2017; Hannah & Eisenhardt, 2018).

Ecosystems aim to improve the value proposition for the final customer. The customer journey serves as a navigational tool to identify potential actors for the ecosystem along customers' touchpoints. Thus, ecosystems can expand along or across the customer journey. For example, Ping An integrated additional services along the customer journey, which formed its health, mobility, and financial service ecosystems. Good Doctor introduced the ability to make doctor appointments for policyholders, followed later by other services from doctors, pharmacies, and hospitals. Within Autohome, Ping An's mobility ecosystem, users receive specific content, e.g., car suggestions for prospective buyers. After buying a car within the ecosystem, customers are directly offered a car insurance policy by Ping An.

Alternatively, ecosystems can emerge across multiple customer journeys by a common touchpoint, as the example of Twint demonstrates. This ecosystem involves multiple customer journeys such as banking, retail, and other services, all of which share the payment process as a customer touchpoint. Both Ping An and Twint's journeys are mapped in Fig. 3.3. Please note that only single alignments are displayed for illustrative purposes for the Ping An ecosystems. Ping An has aligned multiple partners along the customer journey. Further, the ecosystems are interconnected through Ping An's one-account policy, e.g., payments in the

health or mobility ecosystem are intertwined with the financial service ecosystem.

An ecosystem must be managed differently depending on the type of integration with the customer journey, i.e., along or across it. A one-stop shop is advantageous if the ecosystem is structured along the customer journey. For example, Ping An's customers enter the health ecosystem through the Good Doctor app. Ping An, as the orchestrator of the ecosystem, acts as the gatekeeper between customers and the complements—e.g., doctors, pharmacies, or hospitals—and maintains the customer interface. Critical to the ecosystem's success is providing the right services at the right place and at the right time for the customer. Accordingly, the ecosystem is in the foreground of customer perception and acts dynamically in response to the customer.

In contrast, ecosystems spanning multiple customer journeys through a common touchpoint are relatively static and remain in the background; customers focus instead on the actors in the ecosystem than on the ecosystem itself. In these ecosystems, the customers act dynamically; they can enter the ecosystem via several verticals. As the example of Twint demonstrates, these entry points could include banks, retailers, or other service providers. For the ecosystem to succeed, the orchestrator must

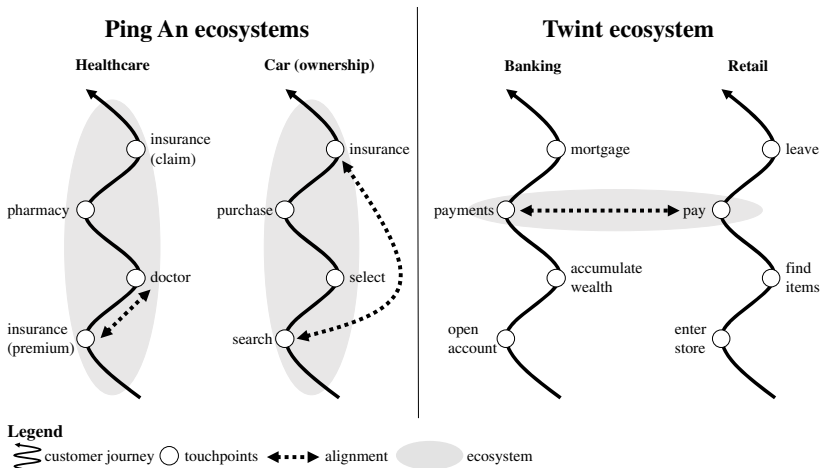


Fig. 3.3 Ecosystem developments relating to the customer journey

have integrated the complements into the ecosystem before the customer approaches them. Figure 3.4 provides an illustrative example of how those two different ecosystem designs relate to customer interaction.

Finally, the composition of its actors is a crucial success factor for ecosystems. As the previous examples have shown, ecosystems are cross-industry collaborations (cf. Aarikka-Stenroos & Ritala, 2017; Davis, 2016; Mäkinen & Dedehayir, 2014; Moore, 1993, 1996). The blurring of traditional industry boundaries enables new business opportunities. Banks, for example, can progressively position themselves in diverse verticals such as retail, housing, or health. Accordingly, practitioners and scholars have discussed whether ecosystems will replace industry logic for performance analysis (Catlin et al., 2018; Teece, 2016). However, the diversity of ecosystem actors is not limited to the industry as a characteristic. It is striking that many startups from the technology sector are successfully integrating themselves using an ecosystem’s logic. For example, Stripe, an online payment processor, became one of the most valuable startups within only ten years. Retailers need only to include seven lines of codes into their online shop for online payments.

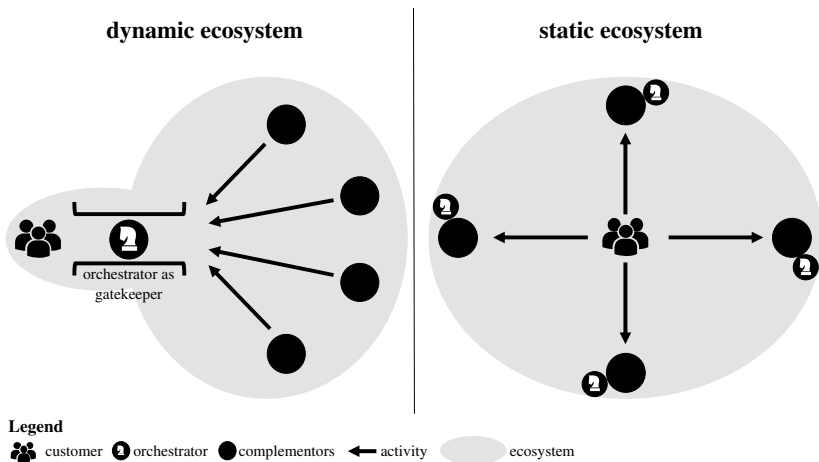


Fig. 3.4 Ecosystem designs for customer interaction

Strengths and Weaknesses of Ecosystems

What is the bottom line on the value of ecosystems for practitioners? In the following, the strengths and weaknesses of ecosystems are presented. This comparison is based on the ecosystem construct and its success factors and is summarised in Table 3.1. Ecosystems open up many advantages and opportunities for firms. By collaborating with other actors, firms create opportunities to enter new markets beyond their industry. They can use ecosystems parallel with traditional business, which ultimately establishes additional sales channels with only minor adjustments to their core product or service. This leverage allows firms to focus more on their core competencies, making them a sought-after ecosystem partner due to their increasingly refined expertise.

In addition to these strengths, however, ecosystems also have weaknesses. In particular, the high dependency on other actors must be emphasised. The entire ecosystem may collapse if a critical partner leaves because the complementarities are intertwined. Further, the mutual integration of the specific complementarities entails adjustment and coordination efforts from each actor. These efforts can be reduced for the complementors by a central orchestrator but never completely diminish. Finally, the potential loss of the customer interface, depending on the firm's position, must be mentioned. Depending on the design of the ecosystem, the customer either accesses the ecosystem solely through the orchestrator (as in the case of one-stop-shops like Ping An's) or leaves the orchestrator out, entering the ecosystem via the complementors (as in the case of Twint).

Table 3.1 Strengths and weaknesses of ecosystems

Strengths	Weaknesses
• Entering new markets • Additional sales channel • Focus on core competence	• Dependency on other actors • Coordination effort • Potential loss of customer interface

Implications for Business Model Innovation: Ecosystems Perspective as Game Changer

The shifts in industries due to digital transformation affect the established collaboration among firms, as explained at the beginning of this chapter. The changing business environment leads to a reconfiguration of the ecosystem alignment structure. These adjustments of the multilateral relationships between firms are the impetus for our argument about why the ecosystems perspective is crucial to business models (innovation). Ecosystems influence the elements of a business model (customer, value proposition, value chain, and profit mechanism) and vice versa (Gassmann et al., 2020).

Any firm's customers can be better served, either by extending the firm's value proposition along the customer journey or by bringing the firm's value proposition into previously untouched industries as those boundaries vanish. The value chain becomes opened within ecosystems through non-generic complements, be it through partners for the firm's own value proposition or a firm generating contributions to another's value proposition. The profit mechanism of a firm goes hand-in-hand with the value capturing mechanism within ecosystems: the profits have to be negotiated among firms, which ultimately leads to the economic co-alignment (Thomas & Autio, 2020) and leading to the legitimisation of participation in an ecosystem (Thomas & Ritala, 2022). It is important to recognise that all opportunities resulting from digitally enabled ecosystems to expand one's own business model simultaneously represent a threat from competitors. Therefore, the only constant for survival is continuous business model innovation.

Use Cases: Ecosystems for the Financial Service Industry

Ecosystems are already an integral part of the financial service industry. The digital transformation of the industry has presented numerous use cases in which ecosystems were essential to the business model.

In each case, the actors jointly create value for the customer through collaboration. Three use cases are presented as follows:

First, banking services themselves offer numerous possibilities for ecosystems. PayPal, which became famous for processing online transactions between buyers and sellers on eBay, provides one example. FinTech has continuously integrated adjacent businesses through acquisitions and collaborations, resulting in the expansion of its ecosystem. PayPal acquired Braintree, a payment gateway supporting payment methods such as credit cards, digital wallets, or local payment systems. The firm's recent collaboration with Google and MasterCard further enables PayPal to compete with banks for payments at card terminals using the NFC interface through the Google Pay app. This example demonstrates that ecosystems are highly dynamic: in the past, PayPal recommended that its users connect their accounts directly to their bank to avoid commission fees from credit card providers such as MasterCard. As of the firm's recent partnerships with MasterCard and Google Pay, PayPal created a financial incentive for customers to increase the transaction volume of its former rivals. PayPal has also expanded its business model beyond payments towards other banking services. New services include fraud detection, risk management (through the acquired startup Simility), and credit and lending (offered directly by PayPal).

The second use case for ecosystems affecting the financial service industry is that of payment systems. In addition to international mobile payment systems such as Apple, Google, and Samsung Pay, there are many national mobile payment ecosystems. While China (e.g., WeChat Pay, Alipay, UnionPay) and France (Lemon Way, Lydia) have multiple ecosystems, a single national mobile payment ecosystem is dominant in smaller countries such as Sweden (Swish) or Switzerland (Twint). For national payment ecosystems to thrive in the long run, they must differentiate themselves from international systems through national features, e.g., customer loyalty cards for local retailers. Payment ecosystems go beyond mobile payment solutions, however. In the Brazilian city of Maricá, the local community bank introduced the social currency Mumbuca. The municipality provides credits and benefit payments in Mumbuca, which beneficiaries can use via their specific payment card or

app. Local merchants accept the social currency, with which no alcohol or cigarettes can be bought.

Third, the financial service industry employs decision support system services, relying on ecosystems for data access. These decision support systems represent another case of successful ecosystem use. The FinTech firm WeInvest, for example, provides robo-advisory services to banks, brokerages, and asset managers. Customers can choose between different investment and purchase strategies from professionals via WeInvest's marketplace. This Singapore-based FinTech cooperates with custodian banks, issuers of structured products, (banking) software providers, quantitative research teams, and investment houses. To enable banks to use its service directly, WeInvest integrated partners on its platform. The platform is the alignment structure, with WeInvest's partners as complementors. Another example of the financial service industry using ecosystems to verify decisions is real estate valuation and estimators. Here, hedonic models from regression analysis rely on data from ecosystem partners to confirm or complement traditional valuation methods such as the discounted cash flow method.

Trends Accelerating Ecosystems

Digital transformation will continue to penetrate and transform the financial service industry in the long term. As a result of digital transformation, customers, service providers, markets, and processes become more interdependent. Five related trends indicate that ecosystems will gain further importance in the future. These trends are customer-centricity, the connection between multiple ecosystems, data analytics, distributed ledger technology, and regulations.

First, customer-centricity is becoming increasingly important; this trend provides an opportunity that can be seized by building ecosystems. Digitalisation is continuously reaching into all areas of individuals' lives. Customers' demands for convenience lead them away from individual products and services and towards solutions offered by a single arranger. Accordingly, customer focus is broadening. For example, instead of focusing on building savings, contracts, or mortgages, housing is now

viewed more comprehensively—from searching for and purchasing a home to renovations for value retention and resale. An orchestrator can offer an integrated service package by developing an ecosystem with hand-picked complementors. These contribute their specialised complements and adapt their processes to suit the ecosystem. In the case of housing, the real estate agent supports the search process while financial service providers are familiar with financing and taxes. FinTech companies can help as valuation specialists, assessing market prices and providing suggestions for property value retention, the latter of which generate recommendations for renovations that craftsmen carry out. Integrating these services allows the customer to use an ecosystem instead of collecting single offers. The orchestrator acts as a concierge, supporting the customers in finding the right partner and complements to meet their demands.

The second trend indicates that ecosystems will overlap in the future. Digitalisation simplifies the collaboration among firms; this simplification is driving the creation and expansion of ecosystems today. The next iteration in this evolution is the interconnection of ecosystems. Verticals such as finance, housing, mobility, and healthcare are interdependent. Finance connects to the housing via mortgages, taxes, reinvestments, and resale. Mobility is related to location (housing) and payments (finance), e.g., through public transport tickets, cars, or gas purchases. Healthcare is already closely intertwined with finance, especially in the life insurance business. The example of Ping An shows that orchestrators have already started to connect ecosystems. Moreover, independent ecosystems will continuously overlap through individual actors operating in different ecosystems as digitalisation simplifies interconnectivity. Thus, ecosystems do not necessarily need to have a common orchestrator to converge in the future.

Third, linking data points from ecosystems enables completely new analyses and process optimisations. Every interaction in an ecosystem generates data, adding puzzle pieces that fit together to form a complete picture of the customer. Machine learning, for example, continuously improves, resulting in better interpretation of data and helping to capture latent customer needs. This technological progress rarely affects the customer directly; instead, affecting processes. Automated customer

analytics reduce human interactions, making processes more efficient. As the example of WeInvest shows, synergies across ecosystem actors can be exploited by merging information to support decision-makers, e.g., risk management.

Further potential in this area lies in IoT, through which devices are increasingly generating data. Today, cars can automatically log the driver's speed and location or process fuel payments at the gas station. Ping An already offers insurance policies based on the driving behaviour of the policyholder. It is not a far leap to conclude that ecosystems will increasingly integrate data from the technologies we use in our everyday life.

Fourth, distributed ledger technology, which enables decentralised platforms via secure transactions while maintaining a high level of privacy, promotes ecosystems. In ecosystems, different partners collaborate to generate value for the customer. Traditional finance requires a central actor that provides financial services to the customer through its business units or the integration of partners. The main actor acts as an orchestrator, arranging the ecosystem and appearing as a trusted authority to the customer. Decentralised finance can dispense such intermediaries, as the blockchain technology forms itself the trusted authority. Thus, decentralised finance creates an ecosystem without a leading orchestrator.

Fifth and last, the market power of individual ecosystem orchestrators is increasingly calling regulators to the scene. Large tech giants have been criticised as they can deliberately influence competition within their ecosystems by shaping governance. Governments are increasingly taking action against such practices. Looking at the European Union, PSD2 requires that banks provide third parties access to their payment services, known as open banking API. Complementors can connect customers' accounts directly with their services through the banks' open API. Each bank provides its own API, so complementors must align precisely to the individual banks. For example, the Royal Bank of Scotland (RBS) supports complementors in its ecosystem with a developer portal. In addition to comprehensive documentation on its API, RBS offers a "sandbox" for developers to test their applications before going live. Other countries, like the Republic of Korea, go further—an open API

integration platform exists for the financial service industry. Open APIs simplify collaboration and fuel the financial ecosystem. By using them, FinTech companies can offer their innovative services in a simplified way.

The Ecosystems Concept Offering New Venues for Research on Business Model Innovation

The ecosystem concept is truly a game changer for business model innovation. The examples in this chapter show how existing business models need to adapt and new business opportunities are added. We summarise which three elements are key to business model innovation and why further research on business model innovation is needed.

The rise of ecosystems results from the increasing opportunities from data. Digitisation reduces transaction costs, which simplifies data exchange and thus accelerates collaboration between companies. The simple exchange and linking of data enables more complex business models between firms, transforming linear value chains into intertwined value networks. While Amazon was early in using its own customer data for purchase suggestions on its own platform, data networking enables new value propositions based on customer and firm data from different platforms and ecosystems. Firms can target customers more precisely while the customer itself profits from improved recommendations thanks to increased comparability and transparency of the offers.

The focus on the customer is the second driver, why the ecosystem perspective is vital for business model innovations. Customers want convenience and barrier-free accessibility of services. This is where ecosystems come in, offering not a single value proposition but rather an integrated solution for the final customer. Accordingly, the value proposition must no longer be thought of from the perspective of a firm but from the customer. Today, it is no longer sufficient for a bank to offer traditional products such as the bank account, credit card, or mortgage. Banks must be the point of contact for comprehensive financial services, offering integrated solutions to their customers, e.g., payment options via

cell phone. Since companies cannot do everything independently, they must collaborate with other specialised companies, even across existing industry boundaries.

Collaborations with new and increasingly additional partner firms are the last key driver for ecosystems in the context of business model innovation. This results from the previous two arguments. In ecosystems, more firms contribute to value creation. The transformation from value chains to value networks and more complex value propositions affect the value capturing. Accordingly, all individual firms' business models need synchronisation with each other. While credit cards used to have a simple four-payment credit card scheme, today, more actors (e.g., big tech) are added, and all are claiming their share of the revenues. The new participants might be demanding but must not overstress existing firms if they cannot replace them entirely.

These game changers by ecosystems have implications for research on business model innovation. Research on business model innovation has to look beyond the boundaries of a single firm. In the following, We point out promising four venues for future research.

First, there are new venues on the joint creation of the value proposition. While business model innovation mainly focuses on the value proposition of a single firm, ecosystems focus on multi-actor value propositions. The ecosystem value proposition is at the heart of the ecosystem concept and is continuously modified (Thomas et al., 2022). Business model innovation research needs to expand towards aligning multiple actors and their business models, also beyond formal collaboration. Also, the process of continuous refinement and modification of the ecosystem value proposition is worth studying as the non-stopping process of innovating the business model needs to resist and adapt towards external contingencies, especially across different firms. Accordingly, we see much potential in the dynamic alignment of business models between multilateral partners towards a superior value proposition. Also, partners need to engage in dynamic learning from the customer to understand the gains, pains, and underlying assumptions. Existing canvas and blueprints need to be revised to overcome tensions between partners by focusing on formal *and informal* governance within the ecosystem. Consequently, understanding the role of the orchestrator

(see Lingens, Miehé et al., 2021b) needs to be advanced and business model patterns be refined, e.g., orchestrator, layer player, customer experience (cf., Gassmann et al., 2020).

Second, the value network of business model innovation offers also promising potential to push the borders of business model research. Within ecosystems, firms collaborate across industries as their boundaries become blurring (Aarikka-Stenroos & Ritala, 2017). New and more diverse partners for value creation expand the perspective of the value creation process. Especially the shift towards a more intertwined value network and increasing B2B2C relationships seem a promising venue for future research. Expanding the scope of the value network towards additional stakeholders such as associations and authorities is beneficial, as they can push policies triggering implications for business model innovation (cf. the ongoing discussion on regulating big techs in the European Union).

Third, business model innovation at the level of individual firm must also be revisited. In the context of ecosystems, individual companies (orchestrators as well as complementors) need not only to adapt their own business model but also to think their way into the business models of partners within the ecosystem. Ecosystem partners must be attracted, be it for setting up an own ecosystem as orchestrator or for joining an existing ecosystem as complementor. The individual firm must therefore be able to propose business models for its partners or align its own business model with others. Ultimately, all firms' business model must generate added value within the ecosystem, which is why an ecosystem can also be understood as a group of interconnect business models. This new approach seems promising to advance the field of business model innovation beyond firm boundaries.

Fourth and last, the role of technology offers multiple promising venues across all elements of business model innovation—value proposition, value network, and value capture. In our book chapter, we put emphasis on DLT/blockchain as an example of decentralised platforms. This new technology demonstrates exemplarily the changing role of traditional orchestrators, as they might diminish or at least get reduced. The impact of new technologies as an external driver offers multiple

opportunities to see how business models and ecosystems need to adapt, on the firm level but also among partners.

Conclusion and Recommendations for Practice

The specialisation will become even more critical in the future. Due to digital transformation, competition steadily increases. Digitalisation opens new business opportunities and business models but also brings global competition. Thus, companies must master their core competencies to remain competitive worldwide. What practical advice for staying competitive can we take from this discussion of ecosystems? Some approaches will help realise the potential of ecosystems. These include thinking in terms of value proposition (Osterwalder et al., 2014), driving business models (Gassmann et al., 2020), working with the scientific method of experimentation (Thomke, 2020), and developing connected business opportunities for the networked economy (Gassmann & Ferrandina, 2021).

To be clear, not every firm needs to orchestrate an ecosystem independently. Ecosystem orchestration requires significant effort to align diverging interests, especially in a highly dynamic field. This effort is not limited to the emergence phase, during which initial partners must be recruited and the alignment structure settled. Instead, an ecosystem must continuously evolve to remain competitive. Accordingly, a complementary strategy is needed so that many actors can integrate themselves into adjacent businesses via ecosystems. They can then use these businesses as a sales channel for their complements without bearing the burden of orchestration.

Whether they run an ecosystem themselves or act as a complementor, firms must not necessarily restrict themselves to one ecosystem. Banks, illustratively, participate in different payment ecosystems such as Apple, Google, and Samsung Pay (so-called multihoming). Also, ecosystem actors may find themselves in overlapping ecosystems, as the example of Ping An shows. The payment ecosystems and Ping An's ecosystems

demonstrate that participation in an ecosystem does not exclude actors from joining others; firms can participate in multiple ecosystems.

In the following, we summarise our recommendations for increasing competitiveness in ecosystems:

1. Create a superior customer journey by walking in your customer's shoes.
2. To increase customer convenience, think about full solutions, rather than single products or services.
3. Rethink how to create and capture value based on process, product, and customer data.
4. Use IoT-based potentials to bridge the gap between the physical world and the financial world; by adding new business models like pay-per-use, performance-based contracting, and subscription models, the bridge from physical product to the finance world (and vice versa) is made.
5. Integrate businesses and orchestrate your partners towards new or superior value propositions for your customers.
6. Think, in B2B sectors, about how to make your customers' customers (and their customers) successful.
7. Create stickiness with customers, either through emotionally binding them or based on data.
8. Promote an open mindset for collaborations; partnering becomes one of the most critical capabilities.
9. Create and capture value, including across and beyond today's industry borders.
10. Think with the big picture in mind but start in small steps; use the scientific method of experimentation.

The future belongs to those players who think in ecosystems and, therefore, can leverage their and their partners' competencies towards one goal: improving the customer journey in all dimensions.

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