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DISENTANGLING COMPETITION AMONG PLATFORM DRIVEN STRATEGIC GROUPS: A COMPARATIVE CASE STUDY OF UK MOBILE PAYMENT PLATFORMS

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Abstract

In platform-driven markets, competitive advantage is derived from superior platform design and configurations. For this reason, platform owners strive to create unique and inimitable platform configurations to maintain and extend their competitiveness within network economies. To disentangle firm competition within platform-driven markets, we opted for the UK mobile payment market as our empirical setting. By embracing the theoretical lens of strategic groups and digital platforms, this study supplements prior research by deriving a taxonomy of platform-driven strategic groups that is grounded on competitive attributes of platform-driven markets; namely interfirm modularity and strategic linkages.

Keywords: Strategic Groups, Digital Platforms, Mobile, Payment, UK, Competition.

1 Introduction

Digital platforms are layered modular information technology (IT) architectures (Baldwin et al. 2000; Tiwana et al. 2010; Yoo et al. 2010) embedded within interconnected innovation ecosystems or networked economies (Adner et al. 2010; Iansiti et al. 2004). In platform-driven markets (e.g., mobile payment), competitive advantage is derived from superior platform design and configurations (Kazan et al. 2014; Pagani 2013; Pil et al. 2006). For this reason, platform owners strive to create unique and inimitable platform configurals to maintain and extend competitiveness within networked economies (Kazan, Tan, & Lim, 2014). To comprehend firm competition within market environments, prior research in strategic management literature has drawn on the concept of strategic groups to unpack the competitive forces behind interfirm rivalries (DeSarbo et al. 2008; Hunt 1972; McGee et al. 1986). By defining strategic capabilities (Nohria et al. 1991) through industry-specific competitive attributes (e.g., firm strategy, product offering or resources), the core premise of the strategic group research stream is that firms belonging to the same strategic group exhibit similar competitive attributes, leading to more intense competition (DeSarbo et al. 2008; Dranove et al. 1998).

Even though digital platforms have become an increasingly pervasive and predominant driver of firm competition within networked economies, there is a paucity of knowledge that investigates how platform owners compete within and across strategic groups? To this end, we conduct a comparative study of mobile payment platforms in an attempt to provide answers to the following research questions: *(RQ1) what are the competitive attributes of platform-driven strategic groups, and; (RQ2) how do platform-driven strategic groups compete within networked economies?*

Specifically, we examined four predominant mobile payment platforms in conjunction with relevant payment actors (e.g., payment infrastructure providers), which when taken together, contribute to an in-depth appreciation of how these mobile payment platforms are strategically deployed in delivering competitive mobile payment services. Through a combination of semi-structured interviews and secondary data sources, we discerned that the four mobile payment platforms differ substantially in their design and configuration. This in turn allows us to arrive at four discrete platform-driven strategic groups for explaining firm competition within platform-driven markets.

This paper supplements prior research on digital platforms and strategic groups by deriving a taxonomy of platform-driven strategic groups that is grounded on competitive attributes of platform-driven markets, namely *interfirm modularity* and *strategic linkages*. In doing so, we enrich the digital platform and strategic group research streams by bridging knowledge gaps on the constituents of platform-driven strategic groups and the competitive dynamics among them. Furthermore, by uncovering the competitive forces that shape platform-driven markets, our empirical findings can aid practitioners in recognizing and formulating platform strategies to respond effectively to market competition. Last but not least, our study serves as a fitting response to Bharadwaj et al. (2013) call for a deeper understanding of the competitive strategies of firms operating within networked economies.

2 Theoretical Underpinnings

Strategic Group Literature

The term '*strategic groups*' was coined by Hunt (1972), who noticed that firm competition was largely driven by three focal attributes, namely firms': (1) extent of vertical integration; (2) product diversification, and; (3) product differentiation. In general, prior research in strategic management literature defines a strategic group as a collection of firms that compete with one another within the same market environment: firms belonging to the same strategic group exhibit similar competitive attributes and strategic recipes in their business operations (McGee et al. 1986; Porter 1980; Thomas et al. 1988). Porter (1980) offered a more granular view of strategic groups, describing them as "*a [...] group of firms in an industry following the same or a similar strategy along the strategic dimensions*" (p. 129).

Porter (1980) alleged that the formation of strategic groups stems from having control over limited valuable resources (e.g., distribution channels). Firms in possession of scarce resources tend to congregate to form strategic groups with privileged access to market environments. Furthermore, firms belonging to the same strategic group not only engage in mutual sharing of pooled resources, but they also enact mobility barriers to preclude firms from entering and exiting the group at will (González-Moreno et al. 2008). Mobility barriers thus reflect segregation strategies adopted by strategic groups to designate and enforce conditions of group membership through controlling member firms' access to exclusive shared resources. More recent studies have observed a shift among firms towards a hybrid strategic group profile. By exhibiting competitive attributes of multiple strategic groups, firms belonging to hybrid strategic groups are able to reduce overall competitive pressure through market diversification (DeSarbo et al. 2008).

Studies by Porter (1980), McGee et al. (1986) have pointed to industry-specific mobility barriers as suitable parameters for classifying strategic groups, because mobility barriers denote outcomes from long-term managerial investment decisions, which are often costly to alter and simultaneously difficult to replicate. For this reason, prior research on strategic groups has explored the formation process of strategic groups across multiple industries, ranging from the banking sector (González-Moreno et al. 2008; Mas-Ruiz et al. 2014; McNamara et al. 2003; Mehra 1996) airline industry (Boyd 2004), pharmaceutical industry (Cool et al. 1987; Fiegenbaum et al. 1987; Leask et al. 2007), insurance industry (Fiegenbaum et al. 1990), or the UK grocery market (Athanasopoulos 2003).

Findings from the preceding studies suggest that the competitive attributes underlying mobility barriers are typically idiosyncratic across industries. The same sentiments were echoed by Mehra (1996), McGee et al. (1986), who subscribed to a resource based view (Wade et al. 2004; Wernerfelt 1984) of strategic groups in which the struggle for control over valuable industry-specific resources characterizes the competitive dynamics among firms. Likewise, Mehra (1996) research into the US banking sector uncovers that the strategic *configurations* of valuable industry-specific resources (or what he labelled as '*strategic industry factors*') constitute defining attributes of strategic groups by directing the production and delivery of competitive goods and services (cf. Pagani 2013; Teece et al. 1997).

From above, we contend that strategic groups originate from industry-specific competitive attributes and that these competitive attributes manifest in the form of mobility barriers enacted through strategic configurations of valuable industry-specific resources.

Strategic Groups within Networked Economies

Increasingly, market competition is driven by networked business logics in which strategic alliances are forged among multiple firms to pool complementary capabilities and resources in augmenting one another's product and/or service offerings (Nohria et al. 1991). Outcomes from such interfirm collaborations generally assume the form of modularized goods and services (Adner et al. 2010; Iansiti et al. 2004; Yoo et al. 2010), a competitive practice termed as interfirm modularity (Schilling 2000; Staudenmayer et al. 2005). To remain competitive in networked economies, firms are compelled to pursue a strategy of delivering unique configurals of goods and services that are less susceptible to replication by rivals (cf. Kazan et al. 2014; Pagani 2013).

To achieve unique configurals, interconnected firms have to: (1) master modularity of external firm components, and; (2) secure access to strategic linkages that connect, build and distribute modularized goods and services. Access to strategic linkages can hence be construed as an equally valuable resource within networked economies (cf. Gulati et al. 2000). In other words, guaranteeing access to strategic linkages is a "*way of achieving the desired benefits with [...] partners [...]*", which leads to the creation of an *opportunity structure*" (Nohria et al. 1991).

Insofar as firms in networked economies compete on the basis of configuring and releasing modularized goods and services, strategic groups in such economies can be defined in terms of their interfirm modularity capabilities and select access to strategic linkages. Conceptually, platform-driven markets function like networked economies where competitiveness is attained through hard-to-

replicate interfirm modularity. Because digital platforms are layered modular IT architectures, competition among platform owners is dictated by strategic linkages in which the interfirm modularity capabilities of such platforms can be harnessed by internal and external parties to co-create and capture value (Nohria et al. 1991). It is thus imperative to comprehend the logic and core components of digital platforms in order appreciate the competitive dynamics among platform owners.

Digital Platforms as Layered Modular Architectures

For this paper, we adopt Kazan et al. (2014) definition of digital platform as “a proprietary or open modular layered technological architecture that supports efficient development of innovative derivatives, which are embedded in a business or social context”. Expanding on Yoo et al. (2010) work on layered modular architectures, we postulate that digital platforms can be delineated into five distinct layers: (1) device; (2) system; (3) network; (4) service, and; (5) content. Each of these five platform layers can independently support interfirm modularity (Schilling 2000; Staudenmayer et al. 2005) by permitting external parties (e.g., third-party developers) to contribute with their respective software and/or hardware components in co-creating and capturing value. By drawing on the conceptual granularity of platform layers, we can better comprehend how platform design and configuration (i.e., structure and arrangement of platform layers) impact competitiveness within networked economies. This in turn allows us to identify strategic groups operating within platform-driven markets. We illustrate the five platform layers using Apple’s mobile payment service Apple Pay.

The device layer constitutes a physical, programmable IT artifact for storing and processing digitally encoded data and instructions. Apple’s iPhone and smartwatch embody these traits by being physical IT artifacts that store and run the Apple Pay software (integrated in passbook app), and initiate Near-Field-Communication (NFC) payments. The operating system layer represents a logical software system that executes and controls software and hardware components. Apple’s mobile payment solution Apple Pay requires iOS and Watch OS as operating systems to control the payment app (software), NFC chips and its secure element (physical). The network layer is the communication channel to transport data packages among different nodes. Apple’s mobile payment service relies on the services of mobile operators (e.g., AT&T) and payment networks (e.g., Visa and MasterCard) to process and settle payments. The service layer consists of software applications for storing, generating and distributing proprietary and/or third-party data. Apple Pay is a payment service that mediates commercial transactions. Additionally, it offers Application Programming Interfaces (API) and Software Development Kits (SDK) towards third parties to integrate Apple Pay into their applications. Lastly, the content layer is the representation of digital data based on audio, video, text and images. Apple Pay generates payment data in the form of purchase amount, merchant, time and/or location, to name a few.

Content		Data Payment Data
Service		Applications Apple Pay (PassBook)
Network		Data Transition Payment & Mobile Networks
System		Operating Systems iOS & Watch OS
Device		Physical IT Artifact Mobile Device & Smartwatch

Figure 1. Digital Platform Layers of Apple Pay.

Despite the existence of interlinked platform layers, prior research has paid little attention to unraveling the intricate relationships among them, opting instead for a more inclusive view of digital platforms where the unit of analysis was largely concentrated on the service layer (cf. Yoo et al. 2010). This culminates in missed opportunities for exploring: (1) the impact of platform design and configuration on service quality (e.g., being tightly or loosely integrated services), and; (2) the way platform services are distributed. Insofar as the competitiveness of platform owners is tied to their

capability in leveraging interfirm modularity to create positive network effects around their digital platforms, mobility barriers may be enacted to buffer against competitive pressure.

From above, it is apparent that knowledge gaps exist with regards to the formation of platform-driven strategic groups. To bridge the aforementioned knowledge gap, we examined the UK mobile payment platform market to derive a taxonomy of platform-driven strategic groups and decipher the competitive dynamics among them.

3 Methodology

Research Method: Interpretive Case Study

The method of enquiry for this study is a comparative and interpretative case study to uncover the competitive attributes constituting platform-driven strategic groups (Walsham 1995; Yin 2009). Accordingly, our study embraces a descriptive and exploratory approach (Gregor 2006) by synthesizing key concepts from digital platform and strategic group literature to craft an analytical lens for: (1) identifying competitive attributes pertinent to platform-driven markets; (2) deriving formal classifications of strategic groups within such markets, and; (3) disentangling how competition plays out among these strategic groups through design and configuration of digital platform layers. We deem the case study approach to be a suitable method of enquiry as it can answer “how” and “why” questions in complex and nebulous research environments (Dubé et al. 2003; Yin 2009). The case study approach is therefore appropriate for untangling the intertwining relationship between market forces and technological mechanisms that are responsible for shaping the competitive dynamics in the UK mobile payment market.

Research Setting: UK Mobile Payment Market

For our study, we turn to the UK mobile payment market as our empirical context. The UK payment industry is in the midst of a massive industry transformation. New payment actors with little or no prior industry backgrounds (e.g., mobile network operators and payment start-ups) have entered the payment industry and are beginning to encroach on the traditionally protected payment market. Institutionalized payment incumbents (e.g., banks) are thus confronted with considerable challenges from these new actors, resulting in payment itself becoming an increasingly commoditized service and a by-product for other lucrative services. By offering accessible, interchangeable and novel digitized payment instruments (e.g., mobile phones), these new players are pursuing a strategy of cultivating new consumer habits, which may establish new customer relationships and presenting potential disintermediation opportunities. The UK mobile payment market saw further competition when the European Commission issued a directive requesting member states to improve competitive conditions within national borders by levelling the field for these new actors.

Case Selections: Four UK mobile payment platforms

To identify platform-driven strategic groups in the UK mobile payment market, we began with four semi-structured interviews with UK payment industry experts. These four knowledgeable industry experts were selected based on their expertise within payments and job descriptions in various financial related organizations (see Table 1). The industry related interviews aided us in constructing an overview of the UK payment landscape and gleaning insights into the roles of various British payment actors (e.g., banks, acquirers, technology providers, payment networks and their schemes owners). From these interviews, we identified four main mobile payment platforms operating in the UK mobile payment market: (1) Paym (a collaborative solution offered by UK banks); (2) Pingit (Barclays); (3) Droplet (a payment start-up), and; (4) Zapp (Vocalink). All four mobile payment platforms offer mobile payment solutions targeted towards businesses, and expect for Zapp, also offer P2P transaction functionalities. We chose these mobile payment services as our cases because these firms possess large and growing user bases, transaction volumes, being operated by the largest financial institutions.

Data Collection

The empirical basis for this study is based on semi-structured interviews and secondary data. Specifically, we conducted in-depth and face-to-face interviews with: (1) head of development at Paym; (2) Senior Vice President (SVP) of mobile solutions at Barclays; (3) CEO of Zapp, and; (4) CTO of Droplet. We also distilled payment reports, white papers, press releases and archival records from industry associations (e.g., the European and UK Payments Council), payment industry online news outlets (e.g., Finextra) and payment news aggregators (i.e., The Paypers) to reconstruct the UK payment industry with their respective actors and identifying commercially active mobile payment services. Interviews questions were adapted from digital platform and strategic group literatures, especially in terms of paying close attention to how platform layers are designed and configured. Our interview strategy was to understand the mechanisms how the mobile payment platform works in practice (i.e., reconstructing narratively and visually a mobile payment transaction) and who are the external partners that are vital in providing the required and complementary resources and capabilities that ultimately enable the mobile payment service. Specially, we were interested to glean insights about how market competition takes place on the network and service layers.

Data Sources	Description
Interviews	<i>In total 8 interviews (recorded and transcribed)</i> <ul style="list-style-type: none">▪ <i>4 Industry Experts:</i> VP-Equity Analyst on Financial Technology (61min), Head of Innovation (64 min), Payment Consultant (48 min) and Strategy Lead (125 min)▪ <i>4 UK Interview Partners:</i> Droplet - CTO (68 min) Paym-Head of Development (65 min), Pingit-SVP of Mobile Solutions (66 min), Zapp - CEO (44 min)
Secondary Sources	<i>Finextra.com:</i> Paym (47x), Pingit (120x), Zapp (71x). <i>Thepaypers.com:</i> Droplet (2x) Paym (8x), Pingit (10x), Zapp (10x)

Table 1. Data Sources

Data Analysis

After a careful review of the data, relevant data was interpreted (Walsham 1995) to reconstruct the UK payment industry. In doing so, we mapped the gleaned insights by conceptualizing a typical mobile payment transaction for each mobile payment platform. We identified external partners on the network and service layer that are vital to provide complementary resources and capabilities to achieve and sustain an operational mobile payment service. Ultimately, our research goal was to discover similar and different platform design and configurations in order to derive platform-driven strategic groups.

4 Case Descriptions: Four Mobile Payment Platforms

Droplet – Payment Start-up

Droplet is a Birmingham based mobile payment start-up that allows individuals as well as businesses to perform mobile payment transactions. Droplet’s value proposition is a free payment service for payers and payees. To initiate Droplet payments in the first place, payers are required to top-up their Droplet accounts by using either their debit card or direct debiting the top-up amount from their bank accounts. Hereby, Droplet is depending on payment gateways for debit cards top-ups or direct debit providers that withdraw the top-up directly from bank accounts. As soon the payment gateway and direct debit provider obtain the top-up on Droplet’s behalf (i.e., a pull payment), they forward it into Droplet’s bank account. As soon the top-up has been credited, all transactions between users are instantly settled within Droplet’s own system (i.e., push payments). As the CTO states: “*we are quite insulated from the real world of banking [...] [the payment transactions] can carry on infinitely with no costs to us and no money movement*”. For those users that would like to withdraw their money from their Droplet accounts, Droplet instructs its own bank to send so-called cost convenient payment batches (i.e., BACS payment) to the beneficiaries.

Paym – Industry owned service

Launched in 2014, Paym is a mobile payment service developed by the UK Payment Council, now owned by its participants. Paym as compared to Droplet is not a standalone application per se, but

rather an integrated feature within existing mobile banking applications. To initiate Paym transactions, Paym is essence on overlay service on top of banks and their corresponding mobile banking application. By being integrated into various existing mobile banking applications, Paym makes use of banks accounts to initiate indirectly a push payment transaction to another Paym linked bank account. In that sense, Paym is a highly complementary service that supports existing bank relationships and using existing payment rails (i.e., Faster Payments and LINK). As the Head of Development states: “the idea is that you already trust your bank, you get this functionality and then everybody can send money to each other using their existing relationship [...] “I’m then providing my bank with the instruction to make a payment and that payment will either go through Faster Payments or it will go through LINK and those are the two approved, two supported, payment schemes in this service”.

Pingit - Barclays

In 2012, Barclays were among the UK high street banks the first, which launched its own internally developed mobile payment service *Pingit* that was initially designed to be a P2P mobile payment service. To initiate Pingit payments, Barclays has a dual approach in processing and settling Pingit payment transactions. Pingit users that are Barclays customers, the settlement occurs internally within the Pingit platform in real-time. In elaborating it further, the SVP states that:” a consumer [pushes] the money which is what a Pingit transaction [is...] we can just move the money from one Pingit account to another Pingit account”. For Pingit users that are not affiliated with Barclays, Pingit sends the push payment through Faster Payments network. As a founding member of the Faster Payments scheme, Barclays has the privilege to have direct access to the Faster Payments network, which enables interbank transfers in near real-time. As the SVP states: “we use the Faster Payments infrastructure, of course, as one of the founders of the Faster Payments infrastructure we have connectivity”.

Zapp – Vocalink

Zapp is a mobile payment service, which is owned by the UK payment infrastructure provider Vocalink. Zapp is designed to provide mobile payment service between individuals and businesses, lacking hereby the P2P payment functionalities. Zapp, like Paym is a payment feature within existing mobile banking applications and accordingly open and depending on bank partnerships. To initiate Zapp payment transactions, Zapp has indirect access to the Faster Payments network. In this setting, banks initiate the transactions between payers and payees bank accounts, which is enforcing existing customer relationships and payment systems. The CEO emphasizes this notion, who underlines that “Zapp work as part of their app, it's re-intermediating the bank into that sort of relationship”.

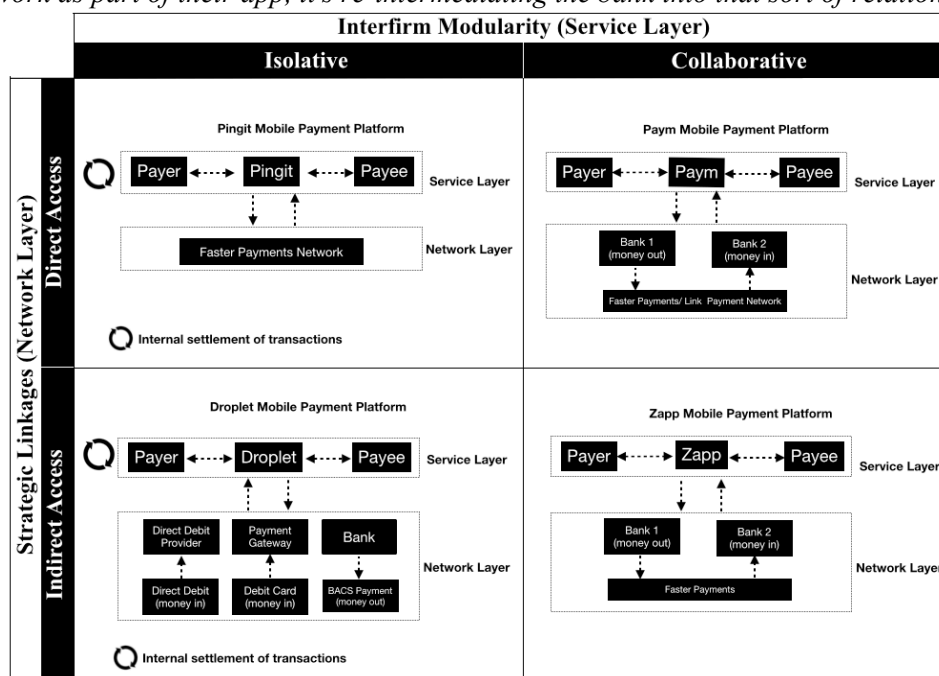


Figure 3. Design & Configuration of Four Platform-Driven Strategic Groups.

5 Case Analysis

From our data analysis, we observe that each of the four platforms design and configure their service and network layers differently to create and deliver competitive mobile payment services. Table 2 depicts the four platform-driven strategic groups derived from our data analysis and the next sections will elaborate on the competitive business logic for each of these strategic groups.

		Interfirm Modularity (Service Layer)	
		<i>Isolative</i>	<i>Collaborative</i>
Strategic Linkage (Network Layer)	Direct Access	<p>Pingit (Monopolistic)</p> <p><u>Service Layer:</u> Independent through internal development.</p> <p><u>Network Layer:</u> Independent. Using existing access points to payment networks (Faster Payments)</p>	<p>Paym (Coopetitive)</p> <p><u>Service Layer:</u> Dependent on external technology providers (Vocalink).</p> <p><u>Network Layer:</u> Independent. Using existing access points to payment networks (Faster Payments & LINK).</p>
	Indirect Access	<p>Droplet (Assimilative)</p> <p><u>Service Layer:</u> Independent through internal development.</p> <p><u>Network Layer:</u> Dependent on interchangeable payment providers & banks to access payments networks (BACS Network).</p>	<p>Zapp (Open)</p> <p><u>Service Layer:</u> Dependent on external technology providers (Oracle).</p> <p><u>Network Layer:</u> Dependent on banks & merchants to access payments networks (Faster Payments).</p>

Table 2. Platform-Driven Strategic Groups.

Droplet

Service Layer: Droplet pursues an isolation strategy on its service layer in order to minimize its dependency on external parties. To a large extent, Droplet operates a self-contained mobile payment service that is realized through a blend of self-developed software and off-the-shelf hardware. By pursuing an isolation strategy, Droplet benefits from agility in platform development, enabling it to acquire dynamic capabilities (Teece et al. 1997) to respond to fast changing market environments. As explained by the CTO: “*Ruby and Rails (pre-configured software development tools) is what’s called a convention over configuration, so they know broadly speaking how you want to do most stuff and it’s pre-configured [...] so you went up having to write very few lines of code [...] very secure and very stable, so out of the box with just the default settings you get an incredibly sophisticated piece of software*”. By having a closed loop payment service, Droplet competes through the provision of instantaneous payment processing and significant reduction in its cost structure.

Network Layer: Droplet has, on its network layer, indirect access to multiple payment networks to move money during payment transactions. Particularly, Droplet collaborates with various interchangeable payment providers, who fulfil the role of *interfacers* between Droplet and relevant payment networks. As stated by the CTO: “[*these payment providers*] are all interchangeable, so if we want to switch suppliers, we switch suppliers and nothing changes [*for Droplet*]”. As such, Droplet mix and match different payment providers to achieve optimal access to payment networks and acquire efficiency gains for market competition.

Assimilative Platform-Driven Strategic Group Profile: Droplet is largely a self-contained mobile payment platform that assimilates accessible and affordable resources to create an isolative platform service layer. Conversely, Droplet’s loose collaboration with external firms on the network layer (i.e., strategic linkages) enables Droplet to maintain flexibility in order to keep its cost structure low in the distribution of its payment services.

Paym

Service Layer: Paym pursues a collaborative strategy on its service layer that depends on interfirm modularity to be competitive. Paym is an interoperable solution and to attain a common technology

standard among different mobile banking applications, software and hardware development has been subcontracted to an external technology vendor (i.e., Vocalink). By being highly integratable into heterogeneous mobile banking applications, Paym maintains its competitive edge by being an inclusive mobile payment service to financial institutions. As mentioned by the Head of Development: *“the idea is that I can sign up for Paym and I don’t need to create a new relationship with a new financial services provider [...] it’s an extension of the functionality that my [mobile banking app] already offers”*.

Network Layer: Paym and its owners have on the network layer the privilege of having direct access to strategic payment networks. In essence, Paym acts as a proxy for bank accounts to utilize existing network access points to send and receive payments. In other words, Paym sends a regular bank payment transaction that supports and solidifies existing market structures. As elaborated by the Head of Development: *“The bank platform talks directly to Paym and Paym talks directly back to the bank platform [...] those are the only connections that exist”*. As Paym has the ambition to set an industry standard, Paym accommodates other financial institutions as well that have indirect access payment networks.

Coopetitive Platform-Driven Strategic Group Profile. Paym relies on interfirm modularity on its service layer to offer a collaborative solution. Since banks are already highly and equally interconnected among each other through existing payment networks (i.e., strategic linkages), competition among banks on the network layer is less intense. For this reason, the competitive realm exists on the service layer for each mobile banking application. Specifically, banks collaborate on Paym in order to integrate it afterwards into their own mobile banking application to differentiate and compete in the market.

Pingit

Service Layer: Pingit pursues an isolation strategy on its service layer to compete with other payment services. Pingit exercise control over its internally developed payment solution by excluding other banks from making use of its payment services. However, Pingit is open towards customers from other banks. As the clarified by the SVP: *“as a competitive bank, [other banks] can’t use Pingit but as a consumer [...] it’s an open market from a consumer perspective [...] it’s our product and our service and we use it as a differentiator from the other banks in the space”*. By harnessing its large user base, Pingit is able to create a closed loop system to take advantage of economic of scale. Specifically, Pingit obtains efficiency gains by processing and settling instant payment transactions among those customers, who have opened their bank accounts at Barclays.

Network Layer: Pingit has through Barclays the competitive advantage of having direct access to the Faster Payments network. This enables Pingit to serve other customers, who may not have a bank account at Barclays.

Monopolistic Platform-Driven Strategic Group Profile. Pingit resembles a monopolistic, self-containing mobile payment service that does not rely on interfirm modularity on the service layer. Likewise, Pingit possesses a competitive advantage over its rivals on the network layer because Barclays has direct access to the Faster Payments network for reaching out to non-Barclays customers in a cost efficient manner.

Zapp

Service Layer: Zapp pursues a collaborative strategy on its service layer that depends on interfirm modularity to be competitive. Zapp invites banks and other businesses (i.e., merchants) to integrate Zapp functionalities into their own payment systems (e.g., mobile banking app). To achieve interoperability and resilience against rival mobile payment solutions, technology development and operations have been subcontracted to an external vendor (i.e., Oracle). Accordingly, Zapp exhibits its competitiveness in the market place by being an inclusive mobile payment service towards various banks and merchants.

Network layer: Zapp has indirect access to the Faster Payments network, since Zapp serves as a proxy for bank account on the payer and payee side. Therefore, Zapp is highly depending on financial institutions and merchants to operate in the payment industry.

Open Platform-Driven Strategic Group Profile. Zapp competes by being an open platform that strives to be inclusive towards other actors in the payment industry (e.g., banks, retailers, acquirers) by encouraging these actors to integrate Zapp into their own payment systems. To create a competitive service, Zapp depends on interfirm modularity (i.e., Oracle, banks) to achieve technological resilience and interoperability. Furthermore, to perform payment transactions on its network layer, Zapp is highly depending on collaborations with various payment actors in order to gain access to payment networks.

6 Discussion

In sum, we have examined four predominant mobile payment platforms in the UK market and inductively derived a taxonomy of platform-driven strategic groups that is founded on the interplay between interfirm modularity (i.e., service layer) and strategic linkage access (i.e., network layer). In this regard, the studied cases illustrate that service and network layers of mobile payment platforms are industry specific valuable resources that define the formation of strategic groups.

Germination Strategy: Monopolistic and Assimilative Strategic Groups

The findings suggest that platform firms that exhibit the profiles of *Monopolistic* and *Assimilative* strategic groups follow the strategy of *Germination*. The *Germination* strategy has the goal to create a competitive service through the establishment of a private value ecosystem. Pingit (*Monopolistic*) and Droplet (*Assimilative*) possess resources and capabilities to establish a self-sustaining value ecosystem by shielding their digital platforms from external firms. In this regard, Droplet and Pingit showcase an *isolative approach* on their *service layers* to circumvent interfirm modularity, which creates conditions for establishing their own private value ecosystem.

In regards to the *network layer*, both strategic groups showcase independency in channelling their services to the mobile payment market. Pingit, for instance, exercise its access rights to send payments through its Faster Payments network layer, whereas Droplet's is highly flexible in accessing multiple network layers. Specifically, Droplet applies a plug-and-play strategy in selecting network layer providers that offer the best value for their mobile payment platform.

To summarize, a key attribute and competitive advantage of *Monopolistic* and *Assimilative* strategic groups is the operation of an isolated platform, which allows to capture value from a self-established private value ecosystem.

Orchestration Strategy: Coopetitive and Open Strategic Groups

The cases that showcase the traits of *Coopetitive* and *Open* strategic groups adhere the strategy of *orchestration*. The *orchestration* strategy complements existing resources and capabilities of various value actors (e.g., banks) to offer a competitive service in a federated value ecosystem. In the same vein, Paym (*Coopetitive*) and Zapp (*Open*) possess the technological resources to establish an interorganizational mobile payment platform (i.e., between banks). Accordingly, Paym and Zapp showcase a *collaborative approach* on their *service layers* that enables interfirm modularity, which creates conditions for establishing a federated value ecosystem. The challenge of a platform with a collaborative service layer is the alignment of technology and business interests.

In regards to the *network layer*, the *Coopetitive* and *Open* strategic groups differentiate in their dependency. Paym is a collaborative solution by the banks, thus, Paym posses already access rights to the Faster Payment network layer (similar to Pingit). However, each individual bank needs the service

layer of Paym to offer a mobile payment service. Contrary, Zapp has a complete solution for the service layer, though; Zapp lacks access on the network layers.

To summarize, a key attribute and competitive advantage of *Coopetitive* and *Open* strategic groups is the augmentation their complementary resources and capabilities to offer an interorganizational mobile payment platform, which allows to capture value within a federated value ecosystem.

Implications for research and practice

This study contributes to extant literature on digital platforms and strategic groups by inductively deriving four platform-driven strategic group profiles based on a comparative analysis of mobile payment platforms in the UK market. A key finding of this study is that the competitive dynamics in the UK mobile payment market takes place on: (1) service and network layers of digital platforms, and that the; (2) design and configuration each of these platform layers mirror firm and industry-specific strategic resources and capabilities. From the practitioner's point of view, we provide decision support by increasing the awareness for different digital platform configurations to reflect on their competitiveness and collaboration opportunities. Lastly, this study may assist policymakers in understanding industry dynamics to design regulatory frameworks to foster effective competition and innovation among various stakeholders. This paper is constrained in its generalizability, as the case study was conducted with four cases in the UK mobile payment market. This limitation yields fruitful future research avenues for replicating the study in other countries and platform-driven markets in order to validate, refine and generalize our taxonomy of platform-driven strategic groups to other contexts beyond the UK mobile payment market.

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