Towards a Framework of Digital Platform Disruption: A Comparative Study of Centralized & Decentralized Digital Payment Providers

Full Research

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Abstract

Digital platforms are disruptive information technology (IT) artifacts that erode conventional business logic associated with traditional market structures. This paper presents a framework for examining the disruptive potential of digital platforms whereby we postulate that the strategic interplay of governance regimes and platform layers is deterministic of whether disruptive derivatives are permitted to flourish. This framework has been employed in a comparative case study between centralized (i.e., PayPal) and decentralized (i.e., Coinkite) digital payment platforms to illustrate its applicability and yield propositions on the nature and impact of digital platform disruptions. Preliminary findings indicate that centralized digital platforms attempt to create unique configurals to obtain monopolistic power by tightly coupling platform layers, which are difficult to replicate. Conversely, decentralized digital platforms purposely decouple platform layers, to foster open innovation and accelerate market disruption. This paper therefore represents a first concrete step aimed at unravelling the disruptive potential of digital platforms.

Keywords

Platforms, Platform Design, IS centralization/decentralization, Digital Payment, Disruptive Technologies

INTRODUCTION

The platformization of information technology (IT) has cultivated ecosystems that deliver innovative derivative products, which disrupt the *status quo* of traditional market structures. As is apparent from the well-publicized cases of the iPhone and the App Store (cf. Burgelman & Grove, 2007; Garg & Telang, 2013; Ghazawneh & Henfridsson, 2013; Tilson, Sorensen, & Lyytinen, 2012), digital platform disruptions not only displace conventional business wisdom by unbundling once glued value chains, but they also erode the profitability of incumbents' business models at an unprecedented speed (Christensen & Bower, 1996; Downes & Nunes, 2013; Lyytinen & Rose, 2003). Yet, despite the growing prevalence of digital platforms, there is a paucity of studies that examines how platform disruptions manifest and their impact on market players.

To this end, this paper represents a small but concrete step towards building a framework for unravelling the disruptive potential of digital platforms. Specifically, we distinguish between the two dimensions of *platform layers* and *governance regime* as focal elements of digital platforms that shape their potential for market disruption. For the dimension of platform layer, we expand on the work of Yoo, Henfridsson, and Lyytinen (2010) by delineating digital platforms into five layers: (1) device; (2) (operating) system; (3) network; (4) service, and; (5) content. Furthermore, depending on the governance regime being enacted (i.e., centralized or decentralized) (Ahituv, Neumann, & Zviran, 1989; Leifer, 1988), we argue that each of these aforementioned

digital platform layers signifies a competitive battlefield for incumbents and disruptors to wrestle market leadership by exerting control over the growth and pace of innovation. Taken as a whole, the interaction between platform layers and governance regime has either amplified incumbents' risk of being disrupted or culminated in accelerated opportunities for disruptors to emerge.

This paper contributes to extant literature on digital platforms (Chakravorti & Roson, 2006; Cusumano, 2010; Eisenmann, Parker, & Van Alstyne, 2006, 2011; Gawer & Cusumano, 2013; Rochet & Tirole, 2003; Yoo et al., 2010) by advancing a preliminary framework that positions digital platform disruption as the interplay between platform layers and governance regime. This framework is then employed in a comparative case study between centralized (i.e., PayPal) and decentralized (i.e., Coinkite) digital payment providers to illustrate its applicability and yield propositions on the nature and impact of digital platform disruptions. In doing so, we endeavour to answer the following research question:

What are the constituent dimensions of digital platforms that drive their potential for market disruption?

It has to be emphasized that this paper focuses on the disruptive potential of digital platform. For this reason, discussions on different platform *categories* (e.g., product or multi-sided platforms) (cf. K. J. Boudreau & Lakhani, 2009; Gawer & Cusumano, 2013) are beyond the scope of this research. The remainder of this paper proceeds as follows: In the next section, we provide a working definition for digital platform. Based on this definition, we offer an overview of extant literature on digital platform layers and governance regimes. In section 3, we present our research method. In section 4, we present PayPal and Coinkite as illustrative cases of digital payment providers that leverage on platform thinking for innovation. In section 5, we synthesized insights gleaned from analysing these two cases. In Section 6, we conclude by: (1) summarizing implications for theory and practice; (2) highlighting limitations, and; (3) proposing avenues for future research.

THEORETICAL BACKGROUND

Defining Digital Platforms and Market Disruption

To define digital platform, it is necessary to differentiate it from that of architecture and infrastructure, terms often utilized interchangeably in past studies. *Architecture* is the conceptual and logical structure (i.e., blueprint) of a functional system (Tiwana, Konsynski, & Bush, 2010; Ulrich, 1995), whereas infrastructure is the actual operationalization of a functioning architecture. Hanseth and Lyytinen (2010, p. 4) hence defined *infrastructure* as a "*shared, open, heterogeneous and evolving socio-technical system*", whose structural composition consists of other infrastructures, platforms, applications and IT capabilities, thereby underlining its *recursive* nature.

Conversely, Yoo et al. (2010, p. 728) defined layered modular architecture (or platform) as a hybrid comprising modular and layered architectures. The *modular architecture* is a '*nested and fixed*' product boundary, where the assimilation of modules culminates in a product-specific artifact. The *layered architecture* supports generativity on top of the modular architecture, establishing the necessary requirements for agnostic derivatives. Building on Yoo et al. (2010) work, we define ***digital platform*** as a *proprietary or open modular layered technological architecture that support efficient development of innovative derivatives*, which are embedded in a business or social context.

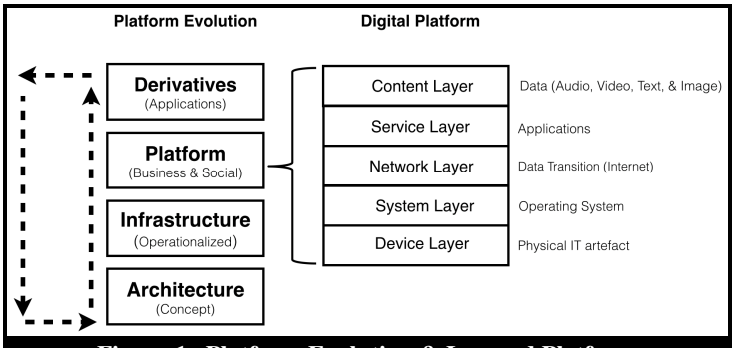

Figure 1. Platform Evolution & Layered Platform

In the following sections, we present an overview of platform layers and governance regime because the interplay of these dimensions is the foundation upon which market disruption happens. For instance, the governance regime of Apple and Google on the *service layer (App Store* vs. *Google Play Store)* differs in their

degree of control by blocking or tolerating apps with disruptive potential (cf. K. Boudreau, 2010; Tilson et al., 2012). As alleged by Amadeo (2013), Android was deliberately introduced by Google as an open source project to mobilize third-party developers and pre-empt Apple from acquiring market dominance on the system and service layer. Disruption thus occurs when existing value network(s) in a market is challenged by innovations from incumbents or emerging players.

The Layered Digital Platform

From our working definition, it is clear that we conceive digital platforms as an amalgamation of more granular layers of technological architectures. We have therefore adapted Yoo et al. (2010) platform logic (layered modular architecture) to distinguish among platform layers (Figure 1), exemplifying each layer on the basis of PayPal's mobile payment service.

The *device layer* is synonymous with physical programmable IT artifacts that store, process and execute digitally encoded data and instructions. PayPal's mobile payment service leverages on Android, iOS and Windows phones as payment devices. The *system layer* constitutes a logical software system that executes applications and exerts control over a physical IT artifact (e.g., mobile phone) (cf. Moore, 1979). PayPal makes use of the aforementioned handsets' mobile operating systems to offer its payment service. The *network layer* is a digital or physical channel to mediate and transport data among nodes. PayPal relies on the Internet as well as credit card networks to process and settle payments. The *service layer* stands for *software* applications that are responsible for generating, storing and disseminating audio, visual, textual and graphical content. By offering payment applications for three different mobile operating systems, PayPal maximizes the reach of its payment service. Finally, the *content* layer is analogous with the presentation of payment data (e.g., payment transactions).

Digital Platform Governance

Extant literature on IT governance espouses the notion of alignment between IT functions and organizational structures to ensure the efficiency and effectiveness of firms' response to internal and external environments. Anecdotal evidence from these studies suggests that organizations typically adhere to one of three IT governance regimes: centralized, decentralized and hybrid governance, the latter being the simultaneous application of both centralized and decentralized governance in certain business units within the same organization (Ahituv et al., 1989; Brown, 1997; Brown & Magill, 1994; Fiedler, Grover, & Teng, 1996; Leifer, 1988).

Ahituv et al. (1989, p. 392) defined centralized systems as those with *the entire computing power concentrated in one site*, and that all *strategic decisions are made in one location*. Contrary, decentralized systems deploy *processors (computing power) in various locations*, *which are not linked through a network*, and that *strategic decisions are located in a core location*, but other decisions can be made *in an unrestricted number of locations.* Likewise, Leifer (1988) and Ahituv et al. (1989) employ the same terminologies, but define them differently. For instance, Leifer (1988, p. 64) emphasized the connectedness of decentralized systems, describing such systems as *peer networks* where *no central processor exists through which communications must pass,* offering a high degree of *communication freedom.* In light of the above studies, we define centralized and decentralized platform governance as follows. In *centralized digital platforms* decisions rights are concentrated, and platform layers are tightly coupled, what we termed as nested and fix platform. In *decentralized digital platforms*, decision rights are dispersed, and platform layers are loosely coupled, what we termed as agnostic platform.

RESEARCH METHOD

Our study approach has an explorative nature in that we synthesize and consolidate key concepts from extant literature to derive a single theoretical framework for understanding digital platform disruption. Furthermore, in order to answer our research question, we employ a comparative and interpretative case study approach (Walsham, 1995; Yin, 2009). By comparing and contrasting platform strategies between centralized and decentralized digital payment providers, our proposed framework offers a theoretical lens for analysing and identifying strategic similarities and differences between them. The case study method has received ample attention in the IS community (Dubé & Paré, 2003) because of its advantage in answering "how" and "why" questions, where the researcher has limited or no control over the study object (Yin, 2009). Schramm (1971) described case studies as a way to illuminate a decision, or a set of decisions within certain events. Since this paper seeks to understand how centralized and decentralized digital payment providers configure their payment platforms to drive potential for market disruption, a case study approach is deemed to be appropriate for grasping complex platform, technology and business structures.

Case Selection, Data Collection & Analysis

We chose two types of payment actors that exemplify current centralized and decentralized digital payment providers: Coinkite and PayPal. It should be emphasized that the cases are illustrative examples and further empirical tests, based on primary data collection, are planned to validate our proposed framework. Data on these cases is gathered primarily from secondary sources (as of April 2014) in the form of publicly available online websites from PayPal and Coinkite. In addition, the first author has been in contact with the CTO of Coinkite through email to verify details, which are not always evident from secondary data sources. The data collection based on web sources brings certain limitations such as biases; though it has the advantage of being accessible and more importantly, verifiable through replicative studies.

To overcome potential biases, we adopted a differentiated role strategy for data analysis (Adler & Adler, 1988). The first author acts as the primary data collector and coder, where the coding process was guided through directed content analysis (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999). The first author was responsible for eliciting web data sources, and mapping relevant data points to the proposed framework. Conversely, the other co-authors play the role of the devil's advocate by coming up with alternative interpretations and counter-arguments. The entire coding process followed an iterative cycle and data analysis was only completed when all authors agree on the placement of data points in accordance with the proposed framework.

COMPARATIVE CASE STUDY OF CENTRALIZED AND DECENTRALIZED PLATFORMS

In this section, we present two different digital payment providers: PayPal and Coinkite. Consistent with Hagiu and Wright (2011), digital payment providers are multisided payment platforms, connecting payers and payees. To illustrate the explanatory power of our proposed framework for deciphering digital platform disruption, we perform a comparative cross-case analysis to pinpoint distinct governance and platform layer idiosyncrasies that give rise to distinct potential for market disruption.

Centralized Digital Payment Platform: PayPal

Founded in 1998, PayPal is a global player in online and mobile payments, with an annual transaction volume of $180 billion for 2013 (PayPal, 2014). In 2012, PayPal entered the mobile payment scene with its first mobile payment solution "PayPal Here", a proprietary payment card reader targeted at small merchants[1]. Compared to full-fledged and costly stationary payment terminals, PayPal's mobile payment solution leverages on existing Android, iOS, or Windows phone handsets, providing small merchants with an affordable alternative for accepting credit and debit cards in payment for goods and services. Although the card reader itself is free, merchants incur considerable payment fees of 2.7% for each transaction.

After gradually equipping merchants with novel mobile Point-Of Sale (POS) systems, and offering other value added services such as customer analytics, PayPal evolves into a full-fledged digital payment platform. By supplying Software Development Kits (SDK) and granting controlled platform API access to third-party developers[2], PayPal strives to enrich and protect its payment ecosystem by permitting select partners to access its payment platform (i.e., moderated platform access). Next, PayPal introduced mobile payment solutions to payers. By downloading the PayPal app and linking it with credit or debit card(s), a payer can initiate a payment within a physical store (i.e., geofencing) by checking-in at the check-out counter. In the background, PayPal sends an authorization request to banks and credit card companies (e.g., MasterCard and Visa) to clear and settle the payment.

Decentralized Digital Payment Platform: Coinkite

Founded in 2013, Coinkite is a Canadian Bitcoin payment start-up that offers small merchants a traditional payment terminal[3], which has been modified to accept Bitcoins as a mean of payment. The major selling point of Coinkite is its embracement of Bitcoin, an open source and decentralized virtual currency, resulting in much lower payment fees (less than 1%) as compared to those charged by credit card networks (on average 3%). The Bitcoin terminal, a rebranded Chinese white label product (New POS Technology, 2014) with a built-in ARM processor[4], operates in two modes: whereas the exchange mode facilitates buying and selling of virtual

[1] https://www.paypal-media.com/press-releases/paypal-unveils-paypal-here
[2] https://www.paypal.com/webapps/mpp/ua/xdeveloper-full?country.x=US&locale.x=en_US
[3] Technical specifications were verified by the first author through direct contact with the CTO of Coinkite.
[4] The ARM7TDMI Chip host and executes Coinkite's POS application.

currencies, the retail mode acts like a regular POS to purchase goods and services with Bitcoins as a mean of exchange.

To clear and settle Bitcoin transactions between payer and payee, Coinkite transmits, via the Internet, a confirmation request to the *blockchain*, a decentralized clearinghouse for all Bitcoin transactions. The blockchain is a public ledger that verifies and stores all Bitcoin transactions since its invention through the computing process known as 'mining'. Because all Bitcoin transactions are publicly accessible, a growing body of third-party services have emerged that specialize in commercializing insights gleaned from analysing Bitcoin data (e.g., blockchain.info). At this stage, Coinkite merely provides a simple overview about incoming and outgoing Bitcoin transactions. For merchants who would like to convert their Bitcoins into fiat money, they can sell their Bitcoins on an online exchange (e.g., Bitstamp). Lastly, to further enhance the appeal of its core service offering, Coinkite invites third party developers to integrate its payment system into their own services through universal access to APIs (Coinkite, 2014).

Coinkite as a Potential Disruptive Force for Digital Payment

With over 143 million (Q4 2013[5]) user accounts, PayPal is undoubtedly one of the dominant incumbents for digital payment (Authers, 2014). Conversely, Coinkite can be construed as an up and coming payment disrupter with its Bitcoin payment service targeted towards underserved niche customers and markets (e.g., small and undesirable merchants). Based on Christensen and Bower (1996) work on disruptive innovation, Coinkite is a contender for low-end disruption while simultaneously, possessing the characteristics of a new market disrupter, who tries to gain ground at the bottom of the digital payment market through decoupling and recombining platform layers.

CASE ANALYSIS AND FINDINGS

Disruptive Potential within layers

In the following sections, we present insights gleaned about disruptive potential of digital platforms for each of the five platform layers by applying of our framework to the cases of PayPal and Coinkite.

Device Layer

Competitive Dynamics: PayPal opted to issue proprietary payment card readers in order to enforce security and guarantee a unified user experience. Coinkite relies on white label payment terminals, which are standardized and available from external sources. In doing so, Coinkite adheres to a cost-driven approach by offering affordable access to merchants through integrating and recombining ready-made payment hardware.

Implications for Market Disruption: By issuing its own *proprietary* payment hardware, PayPal can exert control over the entire payment experience, excluding third-party applications from accessing the card reader. More importantly, PayPal, as a payment incumbent, seeks to control customer contact points. Coinkite, on the other hand, integrates and reconfigures white label payment terminals, which are low cost and widely available, into its payment solution. By adhering to a standardized hardware strategy, Coinkite ensures affordability for merchants by relinquishing control over lock-in effects.

We therefore propose that the *adoption of a freedom-of-choice device strategy by decentralized platform providers disrupts their centralized counterparts because it removes the demand for users to be tied to proprietary device(s) mandated by the latter, leading to increased device affordability.*

System Layer

Competitive Dynamics: PayPal's mobile payment service is hosted on Android[6] and iOS mobile operating systems, both of which are protected by Google and Apple. On the contrary, Coinkite deploys in its Bitcoin terminals, standardized and *reprogrammable* processing chips (ARM), to operate simple (Bitcoin) applications[7].

Implications for Market Disruption: Centralized platforms are dependent on *proprietary* operating systems in order to offer reliable and secure (payment) service. PayPal's mobile payment business is built on top of widely available, though, protected mobile operating systems. Additionally, popular mobile systems such as iOS have rigid rules for platform affiliation (e.g., legal compliance). This in turn translates into hurdles for any platform

[5] https://www.paypal-media.com/assets/pdf/fact_sheet/paypal_fastfacts_Q4_2013.pdf
[6] Android by Google is to a great part protected, whereas the Android Open Source Project is open source.
[7] C programming language

providers in the payment business to reach out to its own users through mobile devices. Coinkite's Bitcoin payment service operates on *reprogrammable* payment terminals (i.e., white label hardware), offering them a high degree of flexibility in offering its Bitcoin payment service.

We therefore propose that the *adoption of an open system strategy by decentralized platform providers disrupts their centralized counterparts because it circumvents restrictions placed by protected systems of the latter, leading to increased system independency.*

Network Layer

Competitive Dynamics: PayPal depends on the rails of banks and credit card networks (centralized) and the Internet (open) to process and settle payments. By linking the PayPal payment application to credit or debit cards, PayPal, to a large extend, is dependent on the network of financial institutions. On the other hand, Coinkite, by processing Bitcoin payments in a decentralized fashion, circumvents the private networks of banks and credit card networks entirely: Coinkite transmits, via the Internet, Bitcoin confirmation requests to the blockchain, which in turn confirms and finalizes transactions.

Implications for Market Disruption: Centralized platforms like PayPal showcase *semi-centralized* behavior on the network layer. To reach platform users in an efficient manner, they are dependent on the Internet as open railways to transmit (payment) data. Though, as data reach its destination, PayPal is reliant on moderated credit card networks to settle payments. Having exclusive access to a closed and globally accepted payment network is one of PayPal's value propositions. The value proposition of decentralized platforms on the network layer lies in the notion of inclusivity, and in general being more accessible than centralized networks (cf. K. J. Boudreau & Lakhani, 2009, p. 70). Coinkite's whole business model relies on open and decentralized networks, in this case the Internet and the blockchain to clear Bitcoin transactions. Conceivably, Coinkite competes on the basis of being a low cost payment provider.

We therefore propose that the *adoption of inclusive network strategy by decentralized platform providers disrupts their centralized counterpart because it avoids accessibility constraints imposed by exclusive networks belonging to the latter*, *leading to increased network ubiquity.*

Service Layer

Competitive Dynamics: PayPal provides closed, though inclusive, platform API access to third-party developers, to nurture its payment ecosystem. By requiring developers and hardware vendors (e.g. POS systems) to pass a verification process, and demanding *a priori* approval for certain services[8] (e.g., charity organizations), PayPal exhibits a protective attitude over its platform. Coinkite espouses a non-discriminatory approach to how it manages its APIs, by being non-discriminatory. Though, APIs access is more straightforward, Coinkite openly invites third-party developers to submit the URL addresses of their services for cross-service integration (i.e., iframe integration).

Implications for Market Disruption: PayPal assumes the role of a hub for third-party developers, allowing the latter to offer value added services by integrating PayPal's payment functionalities into their own service applications. To do so, PayPal enacts a fixed set of rules to support an enriched and vibrant payment ecosystem. Concurrently, PayPal reduces risk through the enforcement of regulatory compliance and fair competition within its own user base (Eisenmann et al., 2011). Coinkite has to build a user base from scratch where the rules for platform affiliation are considerably less restrictive. In order to create strong network effects, Coinkite offers a simple implementation process (i.e., iframe) for incorporating as many (external) services as possible from third-party developers.

We therefore propose that the *adoption of non-discriminatory service strategy by decentralized platform providers disrupts their centralized counterpart because it does not moderate platform affiliation, allowing third-party services to flourish and leading to increased service variety.*

Content Layer

Competitive Dynamics: PayPal's guards its payment data in that only its own data scientists can analyze the data to reveal predictive customer patterns and enhance the firm's overall offerings (e.g., customer analytics for business clients) (Woods, 2012). Transaction data about Bitcoin is open and freely accessible for everyone, as the blockchain functions as a public ledger for all Bitcoin transactions. Due to Bitcoin's decentralized nature,

[8] https://www.paypal.com/us/webapps/mpp/ua/acceptableuse-full

Coinkite facilitates third-party service providers in generating deeper and more meaningful insights from publicly accessible data.

Implications for Market Disruption: The content layer, in the context of this study, manifest through payment data, a vital asset for financial institutions. As payment fees gradually decrease and become less profitable in the future, digital payment incumbents like PayPal are on the quest for new value-added services that could be converted into sustainable revenue streams. For this reason, PayPal has built a moat around its payment data for the purpose of yielding novel insights from business analytics to benefit itself and its partners. Coinkite, on the other hand, has not the urge to deliver analytics on the content layer since all Bitcoin transactions are transparent and accessible by the public through third-party services. Moreover, on the content layer, it can be seen that Coinkite acts as a conduit for competition among third parties to generate value for consumers.

We therefore propose that the *adoption of transparent content strategy (cf. West, 2003) by decentralized platform providers disrupts their centralized counterpart because it dis-incentivizes the latter to maintain a policy of guarded content by encouraging third-party developers to deliver data-driven services, leading to increased openness in innovation.*

Disruptive Potential across Layers

To generalize our observations, centralized digital platform providers seek to obtain monopolistic power by tightly coupling platform layers to derive unique configurals, which are difficult to replicate. Conversely, decentralized digital platform providers purposely decouple platform layers to mobilize third parties to innovate on each layer and accelerate market disruption. Table 1 summarizes the insights from our comparative case study.

Table 1. Comparative Cross-Platform Analysis

Platform Layers	PayPal: Centralized Platform	Coinkite: Decentralized Platform	Disruptive Potential within Layers
Content Layer	***Guarded:*** PayPal adopts guarded content strategy by limiting insights gleaned from business analytics to itself and its paying clients.	***Transparent:*** Coinkite adopts transparent content strategy by encouraging third-party developers to deliver data-driven services from analytics conducted on publicly available transactional data.	***Openness:*** Transparent content dis-incentivize market players from maintaining a policy of guarded content by encouraging third-party developers to deliver data-driven services, leading to increased openness in innovation.
Service Layer	***Moderated:*** PayPal adopts moderated service strategy by granting development rights on its platform to select third parties.	***Non-Discriminatory:*** Coinkite adopts non-discriminatory service strategy by granting universal access to development rights on its platform.	***Complementarities:*** Non-discriminatory API access does not moderate platform affiliation, allowing third-party services to flourish and leading to increased service variety.
Network Layer	***Exclusive***: PayPal adopts exclusive network strategy by utilizing the Internet (open) and private networks of financial institutions to clear fiat money.	***Inclusive***: Coinkite adopts inclusive network strategy by utilizing the Internet (*open*) and the blockchain (*decentralized*) to settle Bitcoin transactions.	***Ubiquity:*** Inclusive networks avoid accessibility constraints imposed by exclusive networks belonging to the latter, leading to increased network ubiquity.
System Layer	***Protected***: PayPal adopts protected system strategy by relying on controlled operating systems to host its application.	***Open:*** Coinkite adopts open system strategy by relying on standardized and reprogrammable operating systems to host its application.	***Independency:*** Open system circumvents restrictions placed by protected systems in reaching out to users, leading to increased system independency.
Device Layer	***Proprietary***: PayPal adopts proprietary device strategy by issuing its own payment hardware to merchants.	***Free***: Coinkite adopts freedom-of-choice device strategy by recombining white label payment hardware.	***Affordability:*** Freedom-of-choice removes the demand for users to be tied to proprietary device(s), leading to increased device affordability.
Disruptive Potential across Layers	***Centralized*** *platforms* seek to obtain monopolistic power by tightly coupling platform layers to derive unique configurals, which are difficult to replicate.	***Decentralized*** *platforms* purposely decouple platform layers to mobilize third parties to innovate on each layer and accelerate market disruption.	

CONCLUSION

This paper was motivated by a growing urgency to improve our comprehension of digital platforms and how constituent dimensions of such platforms could drive market disruption. Prior platform research has typically treated digital platforms as a generic and holistic phenomenon. Whereas one research stream explores pricing mechanisms among platform users, others either examine how platform management induces growth and

innovation or investigate the idiosyncrasies of different platform categories (e.g. product or multi-sided platforms) to better explain and understand distinctions among these categories.

This study contributes to extant literature by delineating digital platforms into constituent dimensions driving their potential for market disruption. A key theoretical thrust of this paper is our postulation of digital platform disruption as the interplay between *platform layers* (i.e., device, system, network, service and content) and *governance regime* (i.e., centralized and decentralized). From our comparative case study, we offer preliminary evidence of the applicability of our framework in unveiling how disruption could manifest between centralized and decentralized platform providers on each of the aforementioned platform layer. Evidently, decentralized digital platforms embody disruptive properties (see Table 1), by decoupling platform layers to mobilize external innovation on each layer and induce massive momentum for market disruption. From the practitioner's point of view, we provide decision support by increasing the awareness for different platform governance regimes and layer configurations choices they have.

This study is constrained in its generalizability as it utilizes secondary data sources from only two cases of digital payment providers. Having said this, these limitations serve as impetus for future research in this direction, an undertaking we have planned for the near future. Primary data collection, including interviews with centralized and decentralized platforms providers, is being organized to test and refine the initial findings of this paper (see Table 1). Furthermore, we are also exploring the option of administering a quantitative survey on stakeholders of digital platforms to validate our proposed framework. Other avenues for future research could include the exploration of necessary and sufficient conditions for market disruption within and across layers as well as the prescription of effective mechanisms to defend against market disruption caused by digital platforms from incumbents' standpoint.

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