



Playful finance: Gamification and intermediation in FinTech economies

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ABSTRACT

This paper examines how digital gamification techniques, which incorporate video gaming elements (rather than full-fledged games) into apps, are reshaping the logics and practices of intermediation that are core to FinTech economies. First, we argue gamification brings into view socio-technical knowledges, such as behavioral science, digital marketing, and user experience (UX) and user interface (UI) design, which are increasingly important to constituting FinTech intermediation. Second, gamification features specialist firms that are presently overlooked by research into the roles of changing advanced producer services (APS) complexes in FinTech and financial intermediation. Third, gamified apps are deployed to advance competitive intermediary positions which playfully capture user attention and configure user behavior, contrasting with FinTech strategies that typically promise users' ease of access, reduced transaction costs and personalized products and services. We illustrate these arguments through three firm-level case studies from across Asia, where the development of gamified FinTech apps has been especially prominent.

1. Introduction

A US retail brokerage smartphone app called Robinhood Markets became front page news across the globe in early 2021. Launched in 2015, and as its name implies, Robinhood seeks to further the so-called 'democratization' of financial investment and targets first-time, relatively young and less affluent investors—with an average age of 31 and median account balance of US\$240 (Tan, 2021). The popularity of Robinhood's investment app grew sharply during the early period of the Covid-19 pandemic in 2020, and its number of active users doubled to around 18 million (Feroohar, 2021). Robinhood's app was propelled from the business pages to the front pages due to its intermediation of a wave of popular stock investment in GameStop (a high street video game retailer). Investors trading via their Robinhood accounts pumped the price of GameStop stock, generating a rise from around US\$20 to US\$400 during the first four weeks of 2021. Investment in this so-called 'meme stock' was animated by user communities and social media forums, especially Reddit (WallStreetBets) and TikTok (#robinhood-stocks). Groups of investors self-styled as 'bros' sought to encourage trading to harm the Wall Street 'pros', most notably, the hedge fund short-sellers who stood to lose millions of dollars as a result of GameStop stock price rises (Massa and Alloway, 2021). In late-January 2021, under considerable media and regulatory pressure, Robinhood introduced a week-long suspension of trading in GameStop stock.

We begin this paper with news media coverage of the GameStop affair because Robinhood was typically accused of 'gamifying' personal finance. Allegations of gamification centered on certain features of the Robinhood app that had also recently drawn the attention of regulators (Chen, 2020; Feroohar, 2021). Key to Robinhood's 'payment for order flow' (PFOF) business model is the need to stimulate regular and frequent trading orders by users. Under this model of FinTech intermediation, Robinhood does not charge user fees for trading and instead generates revenues from the wholesalers who conduct orders on behalf of its retail investors. PFOF was at the heart of nearly US\$70 million in penalties paid by Robinhood to the Securities and Exchange Commission (SEC) in December 2020. During the same month, the firm faced a related and explicit charge of gamification by the Massachusetts Securities Division (Platt 2020). This charge pertained to the behavioral nudges and push notifications built into the Robinhood app; these digital gamification techniques appear to have been particularly successful at encouraging user engagement and frequent and risky trading (Popper, 2020).

In this paper, we take the media and regulatory treatment of Robinhood as provocation to ask how digital gamification techniques, which incorporate video gaming elements (rather than full-fledged games) into apps, are reshaping the logics and practices of intermediation that are core to FinTech economies. FinTech is "a set of innovations and an economic sector that focus on the application of recently developed

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digital technologies to financial services” (Wójcik, 2021: 568). FinTech economies have grown rapidly across the globe over the last decade or so, especially during the COVID-19 pandemic. Firms of all kinds—ranging from specialist start-ups, incumbent financial and telecommunications institutions to BigTech corporations—mobilize digital technology platforms in FinTech economies, providing services such as payments and remittances, investment, saving, insurance, lending, and online-only banking (Lai and Samers, 2021). Key to FinTech economies is competition over new forms of intermediation, as firms experiment with the socio-technical knowledges and business models of ‘the platform’ and vie with each other to attract and retain users to their products and services (Lai, 2020; Langley and Leyshon, 2021). However, social scientists are only just beginning to investigate the ways in which tech writers and consultants are “proposing gamification as a solution” for FinTech intermediation (van der Heide and Želinský, 2021: 711). Wider-ranging research highlights the importance of gamification techniques to digital economies (e.g. Deterding et al., 2011, Deterding, 2015, 2019; Rey, 2015; van Doorn and Chen, 2021; Woodcock and Johnson, 2018). Moreover, a rich body of work shows how games and ludic practices feature more broadly in the cultural production and cultural politics of a host of analogue personal financial economies (Aitken, 2014; Goggin, 2012; Haiven, 2014).

In economic geography and allied fields, current approaches highlight how FinTech intermediation is constituted through the digital infrastructures, data dynamics and business models of ‘platform capitalism’ (e.g. Langley and Leyshon, 2021; Kenney et al. 2021), and the shifting institutional networks and inter-firm relations of financial capitalism (e.g. Hendrikse et al., 2018; Lai, 2020). The growth of FinTech economies entails significant change in the relational institutional complexes of advanced producer services (APS) firms that orchestrate and coordinate financial networks and services. While legal, accounting and management consultancy services have long been vital to financial intermediation, services provided by BigTech corporations, telecommunications companies, and new business-to-business (B2B) firms specializing in digital technology and data analytics are increasingly vital to APS as they make FinTech intermediation possible. Our focus on gamification reveals significant shifts in the practices of intermediation that involve different types of firms, deploy different logics, and mobilize different forms of expertise than those traditionally recognized in established APS and finance sectors. In examining gamification in FinTech economies, this paper thereby contributes to contemporary understanding of the finance-APS nexus by demonstrating how emergent actors and expertise are reshaping firm strategies and the provision of financial services, and in doing so, reconfiguring networks and practices of financial intermediation.

We argue that digital gamification techniques are constituting novel forms of FinTech intermediation and configuring ‘playful finance’ in three main ways. First, gamification involves different kinds of *socio-technical knowledges* not usually considered within intermediary roles of APS firms, such as behavioral science, digital marketing, and user experience (UX) and user interface (UI) design, that are increasingly important to constituting intermediation in FinTech economies. Second, the gamification of FinTech intermediation features *specialist business services firms* that are presently overlooked by research on the APS sector and which point towards significant shifts in the network-relational dimensions of finance. Third, gamified apps are deployed to advance competitive intermediary positions through capturing user *attention* and configuring user behavior. Playful financial products and services typically utilize gamification techniques in apps to retain the interest and engagement of young adult users, differing from FinTech intermediation strategies based on promises of 24/7 convenient access, ‘frictionless’ experiences, reduced transaction costs, and data-derived and personalized offers of products and services. Gamified apps are designed to have playful affordances that reward users for certain personal financial practices, which in turn generate returns of various kinds to the FinTech businesses that offer them. For Robinhood, gamification techniques that

reward regular trading orders by users underpin revenues within the firm’s PFOF business model. However, gamification techniques do not only evoke speculative and risky financial behavior; they can also elicit user behavior that seek to address practical problems of individual and household financial management in new ways (see Ossandón et al., 2021). Gamified apps are often designed to make users attentive to mundane matters of personal finance and incentivize certain routines through rewards, badges, rankings and so on, but in doing so, they are also designed to facilitate the intermediary strategies of the institutions that deploy them.

In the next section, we connect research on digital gamification techniques with current approaches in economic geography and allied fields to understand practices of intermediation that are core to FinTech economies. We explain the significance of gamification for drawing attention to new specialist knowledges focusing on behavioral science and UX/UI design, new types of firms in the finance-APS complex, and new logics of intermediation focusing on attention and user engagement. This is then followed by three case study illustrations from across Asia, where the development of gamified FinTech apps has been especially prominent. Rather than providing extensive analysis of the business models and trajectories of individual firms, these firm-level cases are used to demonstrate the significance and value of research into the gamification of FinTech (Yin 2003). We concentrate our explanation on how these selected firms have deployed gamification techniques in various ways that demonstrate the constitutive role of socio-technical knowledges, new configurations of finance-APS relationships, and changing logics of FinTech intermediation. Furthermore, these illustrations shift the sectoral and geographical focus of current debates on gamification and finance away from digitalized popular stock market investment in the US. Instead, we show the broader relevance of playful finance in shaping and rewarding routines of regular saving, and in connecting everyday mobile payments to climate action. Data on the selected cases and wider processes of gamification in FinTech intermediation are assembled from online documents, press releases, media reports, and the websites of companies, industry associations and regulators in Singapore, Thailand, Indonesia, Hong Kong and China. We also analyzed materials posted on social media channels and online forums relating to the selected cases to examine how user attention and behavior are being captured and configured through fun and play.¹ In addition, we undertook participant observation at four FinTech industry events held in Hong Kong, London and Singapore. At these events, we focused on product offerings and discursive representations of consumer finance, digital apps, and collaborations or joint ventures between banks and technology companies, based on organized talks and presentations, visits to exhibition zones and booths, and conversations with companies’ representatives and event attendees. These provided important industry context and insights that informed our analysis and interpretation of recent trends and future developments in retail finance and FinTech intermediation.² In the final section, we conclude by reflecting on the wider research implications of our analysis for reconfiguring the roles of APS firms in FinTech economies and new logics and practices of intermediation.

2. Gamification in FinTech economies

‘Gamification’ can be usefully defined as “the co-opting of structural formal elements of games, such as the imposition of arbitrary rule-based

¹ These include official social media channels (e.g. Facebook, Instagram) of companies in the case examples and channels set up by unofficial fan groups (e.g. on Facebook, Reddit).

² Participant observation took place at the following FinTech industry events: in-person participation at Singapore FinTech Festival 2019, and online participation (due to Covid-19 restrictions) at Hong Kong FinTech Week 2020, FinTech World Forum 2020 in London, and Singapore FinTech Festival 2021.

systems, ‘scoring’ and a feedback loop between the ‘game’ and the activities of the user, into instrumental activities” (Woodcock and Johnson, 2018: 548). Underlying gamification is the assumption that the entertainment and engagement of games and play can be usefully extended to economic domains (Deterding et al., 2011), and can be mobilized to spur and shape actions in the spheres of work and consumption, in particular (Rey, 2015). Gamification is certainly not exclusive to digital economies — the definition above was offered in the context of call center management systems. Earlier research into gamification has been especially active in areas of education and healthcare, such as examining the values and impacts of gamified techniques on delivering education and health outcomes (e.g. Connolly et al., 2011; Emblen-Perry, 2018; Mortara et al., 2014). More recently, it is digital economies where gamification techniques have gained significant traction. Deterding (2015), for example, traces the development of discourses and practices of gamification to Silicon Valley’s digital technology cluster. ‘Gamification’ has thereby come to refer more narrowly to the incorporation of video game techniques, metrics and feedback loops into non-game digital economies which increasingly operate through smart phone applications (‘apps’) (Goggin, 2021).

Primarily elaborated by the socio-technical knowledges and commercial practices of digital marketing and UX/UI design (Cochoy et al., 2020), gamification is loosely aligned with two wider economic-theoretical discourses that have somewhat contradictory views of socio-economic action: first, a behavioral science rhetoric that regards gamified techniques as one of the choice architectures for ‘nudging’, incentivizing and rewarding rational user actions; and, second, a rhetoric of humanistic design which regards gamified techniques as a way of affording positive and meaningful user experiences. In digital economies, the proliferation of data and algorithmic analytics in networked infrastructures creates new opportunities for gamification techniques to nudge user behavior. While arguably all games (analogue or digital) require the tracking and registering of player actions, this is greatly enabled by Internet-connected, data-rich sensor technologies, particularly those integrated into smartphones and similar devices (Deterding, 2019). In the feedback loop between a digital, data-producing gamified setting and its users, user-generated data is continuously leveraged to recalibrate point-scoring, accomplishments, rewards, levels and so on. User behavior can be modulated in new ways because it is possible for dynamic and ‘live’ adjustments to the rules of the game. For example, in their study of on-demand food delivery platforms in the US and China, van Doorn and Chen (2021) explain how these businesses adopt gamification techniques that rely on data to “turn what may otherwise feel like a succession of repetitive tasks into a series of challenges that offer drivers choices and opportunities to win money by ‘hitting’ various bonus targets” (p. 1349). Such targets are not fixed; rather, they are shifting data thresholds integrated into the algorithmic management of labor processes and outcomes that prioritize productivity. Moreover, as Pascal (2020) stresses, value extraction via user-generated data produced through gamification techniques does not solely operate through the on-platform and in-app modulation of user behaviors. Scores and achievements within a digital game or gamified app are providing new and different means of quantifying user actions and rendering them commensurate across multiple platforms and apps. When combined and compared across apps, data generated via gamification is also available, more broadly, for the inference of latent user behavior, user profiling and market segmentation.

Alongside these data-based and data-driven dynamics, digital gamification techniques are significant in terms of ‘attention economies’ (Davenport and Beck, 2001). As the number of users and the amount of time users typically spend online continue to grow, user attention given to mobile devices and digital content has become an important focus of business competition. Digital marketing and design are often premised on intense competition to garner the attention of users amidst rapidly proliferating platforms and apps. As Terranova (2012: 2) puts it, “According to theorists of the attention economy ... attention is both scarce

and measurable”, and thereby becomes “a kind of capital”. In the video game economy, for example, what Ash (2012) terms “the capture of attention” features “affective design” that “operates indirectly through a series of retentional ecologies and environments” (p. 5). In non-game digital economy domains, gamification techniques of UX/UI design may be incorporated into consumer economy apps to fulfil “a strategy to channel our attention and activity” (Rey, 2015: 281), typically for purposes of up-selling and cross-selling products and services.

Social scientists have recently begun to identify the presence of a ‘techno-optimist’ discourse of gamification in the digital economic domain of FinTech (van der Heide and Želinský, 2021). Building on insights from the literature discussed above, it is apparent that gamification mobilizes socio-technical knowledges and features specialist business services firms that are presently overlooked by research into FinTech economies in economic geography and allied fields. The analysis of FinTech economies typically foregrounds competitive practices of intermediation as core to the organization and operation of FinTech economies (Lai 2020; Langley and Leyshon 2021); a focus on gamification pushes us to develop further critical understanding of practices of FinTech platform intermediation, and how those competitive practices are actually mobilized and according to which forms of logics. First, FinTech intermediation is understood as primarily constituted through the digital infrastructures, data practices and intermediary business models of ‘platform capitalism’ (e.g. Langley and Leyshon, 2021), but to date this approach has largely overlooked the role of the socio-technical knowledges of gamification. Second, existing research frames FinTech intermediation as primarily constituted through changes in the institutional and inter-firm networks of financial capitalism (e.g. Lai and Samers, 2021), but to-date this approach tends to overlook the kinds of APS firms that may include gamification techniques within their commercial offerings. Third, gamification puts into practice different logics of FinTech intermediation through a focus on ‘attention’ or user engagement rather than efficiency and cost savings (e.g. Tan, 2021). In the rest of this section, we elaborate on each of these conceptual arguments in turn.

Business-to-consumer (B2C) FinTech start-ups, banks and incumbent financial institutions, technology firms and other large non-financial enterprises are engaging with the manifold technologies and business models of digital platforms to intermediate retail money and finance (Langley and Leyshon, 2021). Such experimentation with platform intermediation in FinTech is highly competitive and capitalized, feeding processes of economic consolidation and domination that feature acquisitions of start-up firms by banking incumbents and BigTech companies, and extensive inter-business collaborative partnerships between diverse institutions (Lai, 2020). Research broadly consistent with this approach has begun to highlight the role of digital marketing and UX/UI design in the production of FinTech apps (Ash et al., 2018; Tan, 2021; Tkacz, 2019), and points out the influence of behavioral economics and cognitive psychology within these socio-technical practices. The importance of UX/UI design is understood to minimize the so-called ‘frictions’ of ‘user journeys’ (Ash et al., 2018), and to produce ‘passive’ user behaviors that are configured by stock market investment platforms (Hayes, 2021) or robo-advisor financial planning apps (Tan, 2020) through data analytics. But the marketing and design of apps in FinTech platform intermediation is not solely about ease, convenience and smoothing out speedy user experiences. This is especially the case when FinTech businesses advance their competitive intermediary positions by developing and deploying gamified apps. In gamified FinTech apps, UX/UI design knowledge is deployed to *attract and retain* the attention and data of users, and to *modulate* the active behavior of engaged users. Video gaming is a formative experience for the so-called ‘digital natives’ of the millennial generation. In FinTech economies specifically, proponents of gamification techniques often stress how digital natives are also more likely to be distrustful of banks and incumbent financial institutions, and to be alienated by their traditional bricks-and-mortar business channels (van der Heide and Želinský,

2021). Gamification techniques may thus become a vital part of intermediation by FinTech businesses to target the attention of young adult populations who are also likely to be, or to have previously been, video gamers and e-sports players.

The gamification of FinTech can also be understood by foregrounding how FinTech intermediation entails changes in the institutional networks of financial capitalism. Research since the 1990s has identified APS firms that offer legal, accounting and management consultancy services as constituting higher order business services, with particular impacts on the urban growth of ‘global cities’ (Sassen, 2018; Taylor et al., 2011). These APS firms serve as crucial intermediaries in the production and coordination of markets, and the orchestration of global production and financial networks (Bassens et al., 2021; Coe et al., 2014; Pazitka et al., 2022). Although information and communication technologies (ICT) featured in early research on the rise of the service economy (Moulaert and Djellal, 1995), they tended to form the context of enabling geographical and organisational shifts of APS firms (e.g., law, accounting) rather than studied as part of the APS sector itself (Taylor and Derudder, 2016). With the growth of FinTech economies, the institutional networks of capitalist finance are starting to feature new B2B firms that specialize in various aspects of digital platform technology and data analytics (Aitken 2017; Lai and Samers, 2021). ‘BigTech’ corporations (e.g. Alphabet/Google, Apple, Meta/Facebook and Amazon in North America and Europe; Baidu, Alibaba and Tencent in China and Asia) not only provide digital infrastructural ecosystem for the intermediary business of FinTech platforms, but also intermediate consumer financial products and services of their own (Langley and Leyshon 2021). Incumbent financial institutions also shape the uptake of digital technologies and the expansion of FinTech (Haberly et al., 2019; Lai, 2020), while mobile telecommunications companies play a pivotal role in FinTech in Africa (Langley and Leyshon, 2022). A focus on gamification techniques thus invites a reconceptualization of the role of APS in the institutional networks of FinTech intermediation, and an expanded understanding of what counts as relevant APS firms (Lai and Samers, 2020).

Platformed and networked intermediation in FinTech economies is not simply a matter of stitching together transactional relationships with users. It can also feature capturing and retaining user attention and data, making personal financial practices experiential rather than transactional, and modulating and manipulating user behavior. FinTech intermediation is not only about wooing customers through lower fees and costs, or by providing greater convenience and a low-friction user journey at the point of sale of a product or service. It can also be about configuring playful (and profitable) frequent engagements with attentive users. This is especially the case for FinTech intermediary business models that target young adult user populations. Accordingly, APS firms that are in the business of digital marketing and UX/UI design are becoming more significant in the intermediary work of connection and coordination across the institutional networks of FinTech. Some banks and BigTech firms are also investing in internal capacities for UX/UI design to develop financial apps that would capture and increase user attention and engagement. BigTech firms, in particular, are able to utilize their strengths in data aggregation and analysis in their wider platform ecosystem to achieve advantages in new markets. For example, the largest e-commerce firms in China (JD.com and Alibaba) have both ventured into the offline retail space by opening supermarkets (7fresh and Hema respectively), building upon their success with online payments, data analytics and logistics innovations (Lai and Samers, 2021). Such a strategy follows their ability to develop app interfaces that connect seamlessly with services across their wider platform (Tencent and Ant Financial respectively), such that transaction patterns and preferences can be mobilized across the group’s consumer platforms to personalize recommendations and retain users within a particular ecosystem (Wang and Coe, 2021). In summary, foregrounding gamification pushes us to further develop critical understanding of FinTech intermediation by bringing into view different forms of socio-technical

knowledges, new institutional networks of capitalist finance, and different competitive logics and practices of intermediation.

3. The gamification of FinTech intermediation

In this section of the paper, we provide three firm-level cases of the gamification of FinTech intermediation from across Asia. Taken together, the cases illustrate how the development of gamified apps by FinTech businesses features new business knowledges regarding UX/UI, new actors in the finance-APS complex, and new logics of intermediation that capture attention and shape affective behavior. First, we examine the gamified intermediary strategies of a digital bank in Thailand and Indonesia, foregrounding specialist knowledge of UX/UI design in capturing user attention and playful engagements with otherwise mundane savings behavior, whilst performing the expansionary strategies of the bank. Second, we study the foray of a Singaporean gaming company into platformed financial services and its implications for rethinking the intermediary roles and practices of APS firms in the proliferation of gamified FinTech offerings. Finally, we discuss how a gamified payments app in China mobilizes playful encounters to shape low-carbon user behavior in everyday spending activities, which also serves as a strategic tool for locking consumers into the platform ecosystem of a BigTech firm amidst wider competitive pressures.

3.1. TMRW: Making saving fun

TMRW (pronounced ‘tomorrow’) is a digital-only bank launched by United Overseas Bank (UOB), one of the Big Three Singaporean banks with regional ambitions (Lai and Daniels, 2017). Rather than targeting the already well-served consumer banking sector in Singapore, UOB aimed its digital-only banking platform at regional Southeast Asian economies with large populations of underbanked customers, especially the growing urban youth and young working adult populations. In March 2019, UOB launched TMRW in Thailand as Southeast Asia’s first mobile-only digital banking platform, targeting the emerging affluent segment of urban millennials aged 20 to 29.

In addition to the convenience of always-available mobile banking compared to high-street branch banking, TMRW’s business model relies on certain features that showcase the vital role of UX/UI for platform intermediation and the molding of financial behavior and attitudes of users. ‘Engagement’ is a key focus of TMRW’s product offerings and app interface. According to Jimmy Koh, Managing Director and Chief Commercialization Officer at TMRW, “Engagement is using data to learn who you are, predict your needs, and help you to make the right financial decision” (quoted in Efma, 2021). Data-driven engagement and UX/UI design work together to curate particular forms of data-based user experiences and affordances. Unlike a traditional banking website with static pages that list all product offerings under different tabs or webpages, TMRW’s app uses machine-learning tools to analyze user behavior and prioritize certain types of information, creating a personalized menu which omits products that its algorithms deem irrelevant. Users can track their expenses, set a budget on the app, and be alerted when they are approaching their limit for the month. The app can also alert users to expiring subscriptions and services, which they could then cancel or renew.

One of the most popular features on the banking app is the ‘City of TMRW’, a virtual city that users can build based on the amount deposited in their TMRW savings account (Fig. 1). The more that users save, the faster they level up and unlock various options to enhance their virtual city with more complex buildings and items. The idea to develop a gamified savings feature came from a 2017 UOB survey conducted in Indonesia, Thailand and Malaysia, which found that millennials “respond better to prompts that are fun and do not make them guilty” when it comes to managing their personal finances. This “led the team to consider using games to encourage saving and smart spending”

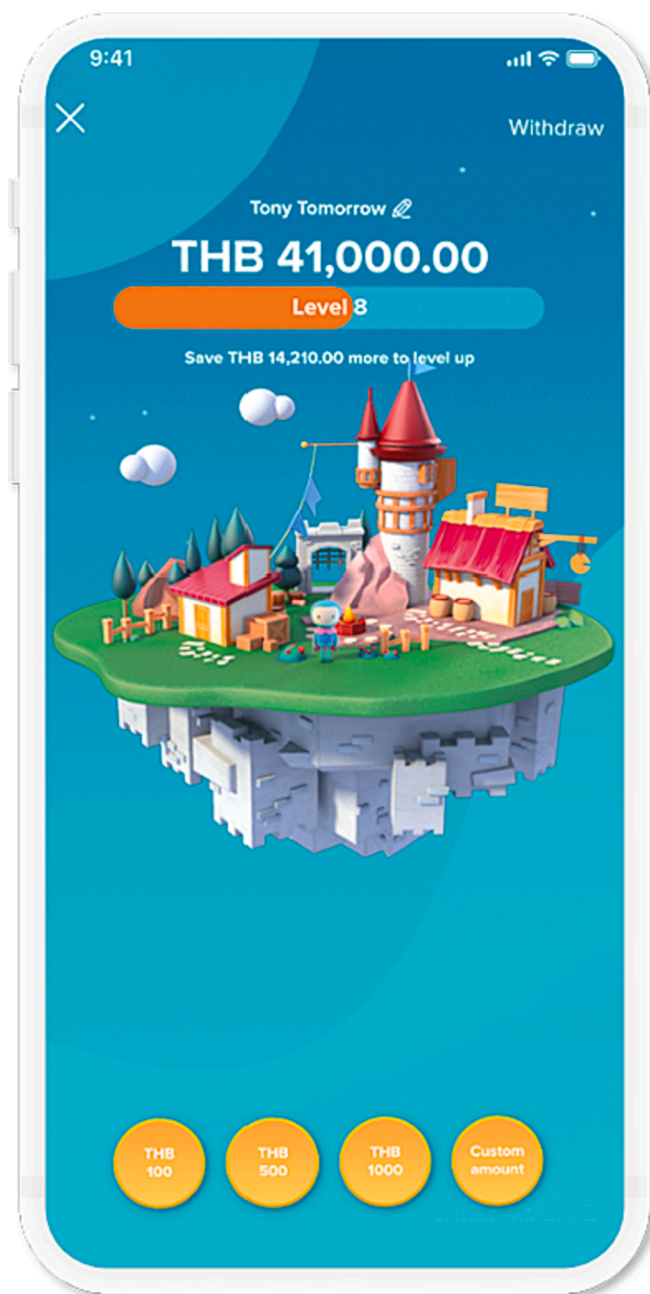


Fig. 1. City of TMRW, a game within the TMRW banking app linked to customers' savings accounts. (Source: <https://www.tmrwbyuob.com/th/en/features.html>)

(DesignSingapore Council, 2019).

Following its initial success in Thailand, TMRW was launched in Indonesia in August 2020. In addition to the City of TMRW game, the Indonesian launch included a digital marketing and education campaign called WIN (Waktu Indonesia Nabung; which loosely translates as 'Time to save, Indonesia'), which sought to encourage customers to curb unnecessary spending and top up their savings instead (Fig. 2). Its website³ extolled the virtues and benefits of saving, reminding customers that "Chasing your dreams starts on pay day", and that "Saving can be fun, just like a game. Save a little bit every month when you get paid. It gets easier the more you do it! From now till the end of the year, save every

month in your TMRW account to unlock exciting rewards." Rewards operate through a familiar gamified system whereby the more customers top up their savings account, the more rewards they can unlock, such as monthly e-vouchers and lucky draw chances for prizes such as smart phones and game consoles. The objective of WIN is to "promot[e] financial literacy among our customers while making the experience enjoyable" (Emfa, 2021). This emphasis on fun and play for users is distinctive in a competitive context dominated by platform intermediary strategies usually focused on the efficiency and convenience of digital banking and personal financial services. Both the WIN campaign and wider launches of TMRW in Thailand and Indonesia are heavily promoted via digital marketing campaigns on social media platforms. For example, social media influencers and local celebrities have been enrolled in marketing and engagement activities on Facebook, Instagram and TikTok, combined with competitions and live events (UOB, 2021).

TMRW's intermediation strategy has been enabled through external institutional partnerships as well as developing internal technological capabilities, with firms and specialist services that would have been foreign to banking strategies until recently. In terms of institutional networks, we see the importance of partnership and engagement with two APS companies: Meniga, an Iceland-based company that manages and analyses customer data, and Personetics, an Israeli company that uses artificial intelligence (AI) to personalize recommendations based on user transactions. Socio-technical knowledges from these intermediaries are folded into the design of the TMRW app "by deploying best practice UX and UI principles, as well as AI and data analytics, [...] to create uniquely personal user experience for the customer, which simplifies financial services by learning from each customer's usage patterns, anticipating the upfront functions and information that each customer needs" (DesignSingapore Council, 2019). In terms of internal capabilities, the TMRW team includes a former game developer, UI specialists working on screen interaction, and a service design team that focuses on customer service through the bank's chatbot and call center. UOB (as parent company) has established a pan-regional team called Engagements Labs (eLabs) that uses technology and behavioral insights to deepen customer engagement across Indonesia, Malaysia, Singapore, Thailand, and Vietnam (The Business Times, 2018). With these locally based teams, UOB aims to develop more effective—and affective—ways of conversing with customers by "building a glossary specific to each market which takes into consideration cultural, behavioral and language norms" (UOB, 2018c). These include attention to how language is being used differently by each generation of users, especially on digital devices, underscoring the importance of affective engagement as financial decisions are strongly driven by emotions and relations as much as rational calculations of costs and efficiency (Karaagac, 2020; Lai, 2017; Santos, 2021).

The vital role of these socio-technical knowledge and associated firms for a digital intermediation strategy is reflected in UOB's investment in technology and FinTech start-ups, in addition to working with external APS companies and developing in-house teams. In 2018, the bank took up a minority stake in Personetics to boost its AI-based solutions, with the aim of "[providing] customers with real-time, personalized and insightful guidance to help them improve the way they save and spend and to help them make better financial decisions" (UOB, 2018a). In the same year, UOB also set up a joint venture with China's Pintec (a digital wealth management company) to create Avatec.ai, which is incorporated as a subsidiary company of UOB (with 60 per cent majority). Avatec develops digital credit assessment solutions for assessing the credit quality of potential customers based on online transactions, social media activities and other forms of digitized and gamified data beyond what is traditionally used in evaluating personal or business credit applications (UOB, 2018b). This technological capability was particularly significant to enabling the subsequent launch of TMRW Cash Plus (personal line of credit) in Thailand in February 2021, in a market with poor credit profile information.

³ <https://www.tmrwbyuob.com/id/en/promotions/win-campaign.html>.

NABUNG BANYAK, MENANG BANYAK

Cukup lakukan sejumlah transaksi dan tambah saldo dari bank lain untuk WIN reward langsung bulanan! Dapatkan juga bonus reward dengan memenangkan WIN-o-meter di Mei & Juni 2023 berturut-turut!

WIN-O-METER	SYARAT WIN-O-METER		REWARD BULANAN (Mei & Jun 2023)		RAJIN MAKIN CUAN
	PENAMBAHAN SALDO AKHIR BULAN	MIN TRANSAKSI	REWARD LANGSUNG	DULUAN LEBIH CUAN	BONUS REWARD
RISING SAVER	+ Rp2.000.000	1	-	-	Rp20.000
YOUNG MONEY	+ Rp5.000.000	2	Rp12.500	Rp12.500	Rp22.500
BOSS-QUE	+ Rp10.000.000	3	Rp20.000	Rp20.000	Rp30.000
THE MONEYBAG	+ Rp20.000.000	4	Rp45.000	Rp50.000	Rp65.000
RITCHY RICH	+ Rp30.000.000	5	Rp65.000	Rp65.000	Rp75.000
BIGSHOT	+ Rp50.000.000	6	Rp100.000	Rp100.000	Rp125.000
ROYAL HIGHNESS	+ Rp75.000.000	7	Rp125.000	Rp150.000	Rp187.500
YOUR MAJESTY	+ Rp100.000.000	8	Rp145.000	Rp165.000	Rp200.000
THE SULTAN	+ Rp150.000.000	9	Rp200.000	Rp250.000	Rp265.000
LORD OF TMRW	+ Rp200.000.000	10	Rp265.000	Rp285.000	Rp300.000

Fig. 2. Waktu Indonesia Nabung (WIN), TMRW’s financial education campaign with tiers of rewards and lucky draw prizes. (Source: <https://www.tmrwbyuob.com/id/en/promotions/win-campaign.html>)

As a digital-only banking platform targeted at urban millennials, TMRW has identified growing middle-income urban populations in Southeast Asia as a user population with long term potential. Its strategy of playfully attracting and nudging customers into particular forms of savings behavior and its overall branding are underpinned by a focus on entertainment, lifestyle perks, and social media engagement, which frames personal financial practices as fun and rewarding. Revealingly, ‘play’ also features prominently in how TMRW communicates and represents its strategy of intermediation in presentations to investors (see Fig. 3). TMRW has strategically chosen ‘where to play’ and ‘how to play’ precisely because this is ‘how to win’, that is, how to acquire 3 to 5 million new customers and to hold users’ attention to ‘grow transactions’ and ‘increase balances’ (UOB, 2020). Accordingly, the milestones of strategic business success for TMRW include user attention-focused indicators in corporate presentations and news reports (Bangkok Post, 2020; UOB, 2021). Instead of the more familiar figures on deposits, fee income or net interest margin that typically prevail as performance metrics for personal banking businesses, TMRW emphasizes how its high Net Promoter Score (an industry standard that measures customer loyalty and satisfaction) places it above local digital-only banks and FinTech firms in Thailand and Indonesia, and also makes reference to its App Store ratings on Google Play and Apple Store (Fig. 4). Metrics of user attention and engagement thus provide important new indicators of the success or otherwise of FinTech intermediation. As a licensed and regulated banking entity, TMRW is still subject to ‘traditional’ criteria such as capital requirements and scrutiny of assets and liabilities. However, the emphasis on other performance metrics relating to user engagement and satisfaction highlights the emerging importance of new socio-technical knowledges and how these are shaping the logics and practices of FinTech intermediation.

3.2. Razer: UX and the changing APS complex

Established in 2005, Razer was founded by Singaporean entrepreneur Min-Liang Tan and made its name in the design and sales of

specialist gaming hardware, such as mice, keyboards, headphones, and laptops. Headquartered in California, USA and in Singapore, Razer was listed on the Hong Kong stock exchange in 2017. Razer’s expansion into FinTech started in 2017 with the establishment of Razer Gold, a popular digital gaming currency accepted on many mobile and PC gaming platforms (e.g. Google Play, EA Play). Users of Razer Gold can access online entertainment services at better prices and unlock exclusive in-game content (e.g. special outfits or items). Razer also operates a loyalty points system (Razer Silver)⁴ that rewards users of its digital currency, as well as other activities such as competing in online games, participating in online discussions (Razer Insider), or using a blockchain-based app (Gamma)⁵ that utilizes idle computer processing power for crypto-mining. Razer Silver points can be redeemed for discounts on gaming hardware, in-game loot/packs, or exclusive in-game items.

Building upon its gaming currency success, Razer FinTech was established in 2018 as the financial technology arm of Razer Inc., and signaled a strategic venture into the intermediation of digital payments (B2B and B2C) among the youth and millennials market in Southeast Asia (O’Neill, 2021). Through its e-wallet and digital payment platform (Razer Pay and Razer Merchant Services respectively), Razer FinTech’s intermediation strategy is targeted at problems faced by young gamers in making payments for their gaming and entertainment needs, especially in countries with large underbanked populations. It has also forged strategic collaborations with established financial institutions to extend its market reach. For example, in collaboration with Visa, Razer launched the Razer Visa card, a virtual prepaid service that does not require users to have access to a bank account (del Rosario, 2020). Other than conventional card benefits such as cash-back rewards, there are

⁴ <https://gold.razer.com/silver/earn>.

⁵ The Gamma app has been suspended as of 15 September 2022. (<https://insider.razer.com/razer-gold-silver-20/gamma-an-announcement-regarding-gamma-39736>)

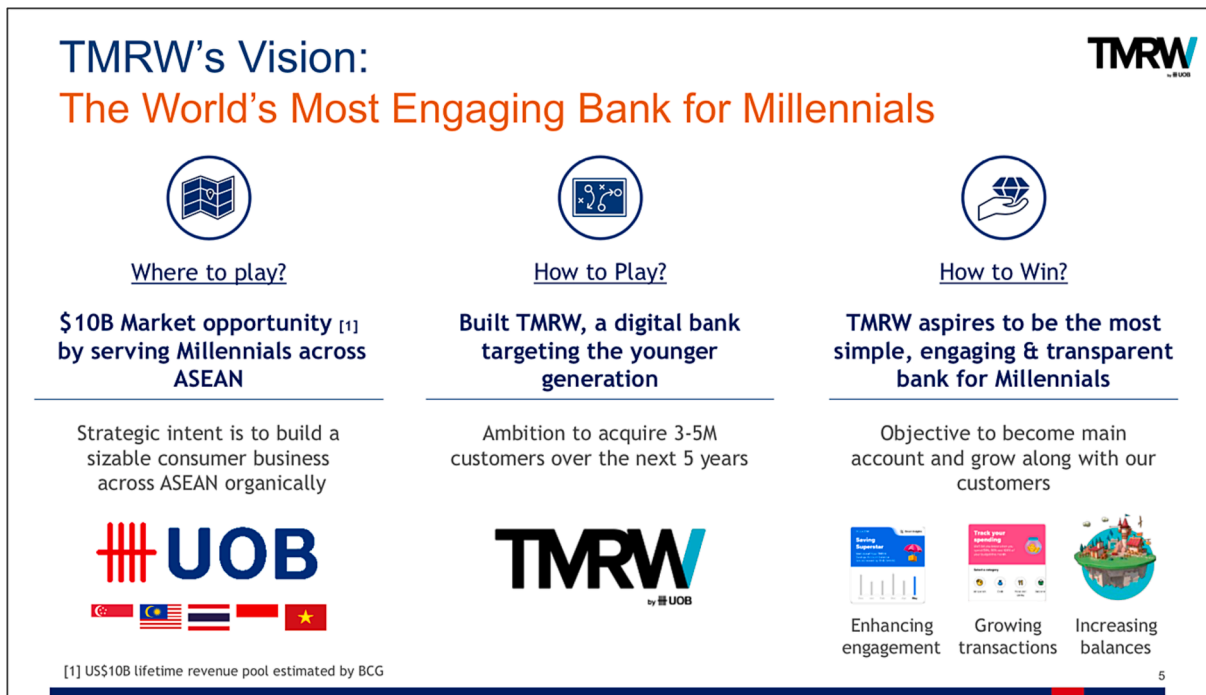


Fig. 3. Presentation to investors highlighting 'play' as central to TMRW's strategy. (Source: UOB, 2020)

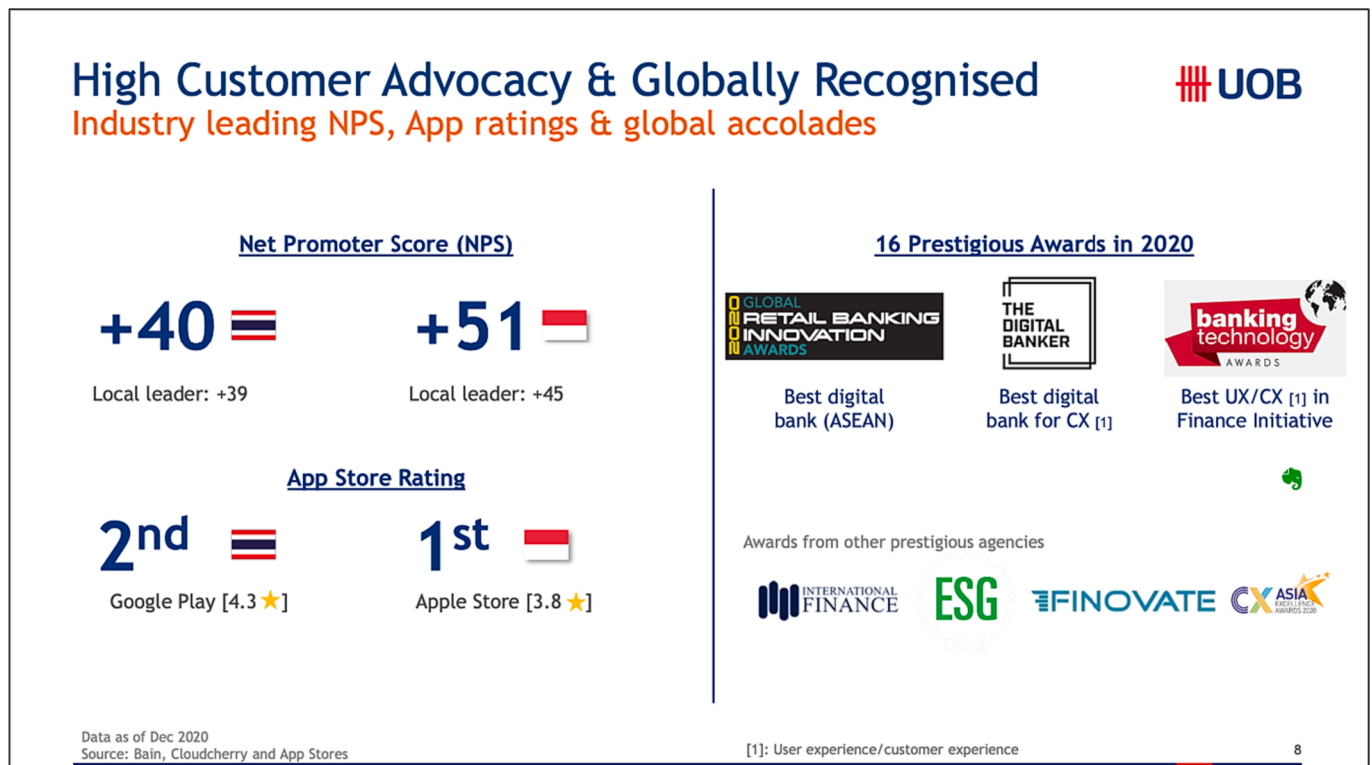


Fig. 4. Measures of achievement based on Net Promoter Scores, App Store ratings, and industry accolades for UX/UI. (Source: UOB, 2021)

also in-app gamified bonuses for purchasing Razer hardware. Beyond digital payments, Razer has partnered with Franklin Templeton to develop digital wealth management platforms for the youth segment (Razer, 2020). While Razer FinTech does not exclusively target gamers, it is heavily marketed to Gen Z and millennials — a demographic where the Razer brand is already well established. Razer FinTech is now working towards building a digital banking platform in Southeast Asia.

Although Razer's bid for a digital banking licence in Singapore (as Razer Youth Bank) was unsuccessful (Finextra, 2020b), it plans to proceed with a similar strategy in Malaysia and the Philippines where it has strong business presence, coupled with large youth following and favorable regulatory outlook for digital banks (Fong, 2020).

Razer has taken the gamification of FinTech quite literally in expanding its core business from gaming technology and services to

financial services. Capitalizing on brand loyalty as a basis for user attention and data analytics of user behavior in its online platform give Razer a unique edge in an increasingly crowded and competitive payments market. Razer's intermediation strategy is closely tied to user experience. UX design plays a vital role in Razer FinTech's strategy, as evidenced by the appointment of Eduard Fabian as CTO, who brings UX experience from his previous role in building the TMRW digital bank in Thailand (see previous section) (Fong, 2020). But 'user experience' and 'user attention' for Razer extends beyond the design of gamified platforms and reward systems for personal finance; it also features ludic digital marketing engagements between its founder and CEO Min-Liang Tan and the wider gaming community.

Responding to fan requests and ideas sourced from the 'crowd' to produce specific (and often unplanned) products can make consumers feel valued and build brand recognition and loyalty beyond the appeal of physical product quality or price competition. In 2013, in response to the fan-created Facebook page 'Give Us the Razer Toaster',⁶ Tan posed a challenge on social media that he would make an actual Razer toaster if garnered 1 million Likes. This was later taken up as an April Fool's joke (Project Breadwinner)⁷ by the company in 2016. After years of fan requests, Razer announced in 2019 that it would proceed with developing the game-oriented kitchen appliance (Nelius, 2019). The company's mascot also emerged as the result of fandom engagement. In February 2020, Tan posted on Instagram a cartoon snake design (based on the company's snake logo) from one of his graphic artists recently returned from paternity leave.⁸ Dubbed Sneki Sneki, Tan's social media musing about making a plushie for the member of staff's new baby sparked fan art submissions, homemade plushies, and even tattoos. When it did become official merchandise, the Sneki Sneki plushie became a core component of the company's sustainability drive (James, 2020). This works through a gamified structure—with every Sneki Sneki merchandise sold, proceeds go towards a collaboration with Conservation International to save 10 trees. Every 100,000 trees saved unlocks a new Sneki Sneki product (e.g. cushion, blanket, hoodie) to satisfy fan desires for Razer merchandise while encouraging greater environmental action amongst its fan base. A progress chart on the official website displays the items unlocked, with more than 1 million trees saved as of June 2023 (Fig. 5). Sneki Sneki has since become the firm's sustainability mascot with its own cartoon series (Razer, 2021).

In sum, Razer targets existing users of its gaming platform and deploys digital gamified techniques to garner attention for the personal financial services it now intermediates for a youth demographic. While toasters and plushies may appear to have little connection with Razer Inc.'s core business of gaming hardware and digital gaming currency, and Razer FinTech's focus on youth consumer finance, they are part of a core strategy focused on playful online encounters, building fandom, and sustained engagements that then translate into services of financial intermediation. In 2021, its FinTech business grew by 26.6% year-on-year and contributed 16.1% to the Razer Group's gross profits (Razer, 2022). As a gaming technology company, partnerships with incumbent financial institutions Visa and Franklin Templeton have positioned Razer as a serious player in shaping the digital strategies of existing financial services providers, both in terms of product delivery (through specific app design and platform infrastructure) and knowledge generated from user content and interaction in Razer's ecosystem. These developments highlight the need for incorporating new APS firms that specialize in various aspects of digital platform technology and data analytics, and new forms of platformed and networked intermediation, into analysis of the changing processes and institutional relationships of FinTech economies.

3.3. Ant Forest: Ethical behavior through mobile payments

The gamification of FinTech platform intermediation is not only about modulating mundane financial behavior through the entertaining affordances of apps. Gamified FinTech apps may also playfully connect the personal financial practices of users with wider ethical behavior and subjectivities, although typically still in the service of the competitive intermediary strategies of the firms that offer them. Our final example points precisely to the intersection of gamified FinTech intermediation and ethical forms of personal finance.

BigTech platform companies established first-mover advantages which resulted in their on-going domination of China's mobile payments sector. Tencent's WeChat Pay and Alibaba's Alipay subsequently provided the bridgehead for these firms to expand into the intermediation of personal financial services more broadly (Zhang and Chen, 2022). In 2014, Alibaba consolidated its FinTech operations into a spin-off company, Ant Financial Group, which currently operates China's most popular mobile payment platform (Alipay) and offers a host of digital banking, investment, lending, and insurance services. Launched in 2016, Ant Forest is a mini game within the Alipay app. It aims to promote greener lifestyles by encouraging users to reduce carbon emissions in their daily activities. When users make environmentally friendly lifestyle choices, such as paying utility bills online, taking low-carbon travel options (e.g. public transportation, shared bike rentals, walking), declining disposable cutlery with online food deliveries, or purchasing home appliances with high energy efficiency, these are converted into virtual 'green energy points'. These green energy points are accumulated to grow virtual trees in the Ant Forest game (Fig. 6).

There is a community gaming element to Ant Forest, wherein users can share green energy points with friends to help them grow their virtual trees or steal points from them to grow their own. The tree-growing progress of users is charted on a leaderboard. User attention is also stimulated by certain UX design features within Ant Forest. For example, all green energy points earned must be collected within 72 h before they dissipate, and users are motivated to check on their virtual trees before the energy points expire or are stolen by friends. When a virtual tree is fully grown, it can be converted into a real tree planted by Ant Group and its philanthropic partners in parts of China at risk of desertification. Players can select from several types of trees/shrubs adapted to arid environments, such as saxaul, sea-buckthorn, oriental arborvitae and desert poplar (Zeng, 2020). They can also follow the progress of actual tree planting sites through live feeds and site visits organized by Ant Group and its local partners. Ant Forest effectively acts as a personal carbon account tracking app and is the largest private sector tree-planting initiative in China. The design of this gamified FinTech app draws from popular animal-raising and farming mobile games but with real-life outcomes. By connecting the virtual tree-growing experience with transactional activities through a mobile payment app, Ant Forest encourages users to reduce their carbon footprint by creating a tangible connection between personal behavior and environmental impacts.

Since its launch in 2016, over 600 million users of Ant Forest have planted more than 326 million trees, contributing to reforestation in some of China's most arid regions. Ant Forest has been widely held up as evidence of the innovative potential of mobile technologies for citizen engagement and behavioral change in environmental action (Green Digital Finance Alliance, 2020). Proponents argue that such "personalized CO2 feedback on behaviors, gamification and network effects [could help to] establish new green behaviors as the norm that are rewarded and recognized across large digital communities" (Finextra, 2020a). There are plans to expand the personal carbon accounting function to enable carbon asset trading and investment in the future (Ecommerce Strategy China, 2018; Finextra, 2020a). Ant Forest has won numerous global environmental awards, such as the UN Champions of the Earth Award in 2019 (United Nations Environment Program, 2019) and the UN Global Climate Action Award for leveraging digital

⁶ <https://www.facebook.com/RazerToasterPlease/>.

⁷ <https://www2.razer.com/breadwinner>.

⁸ <https://www.instagram.com/p/B8tU0LansCS/>.

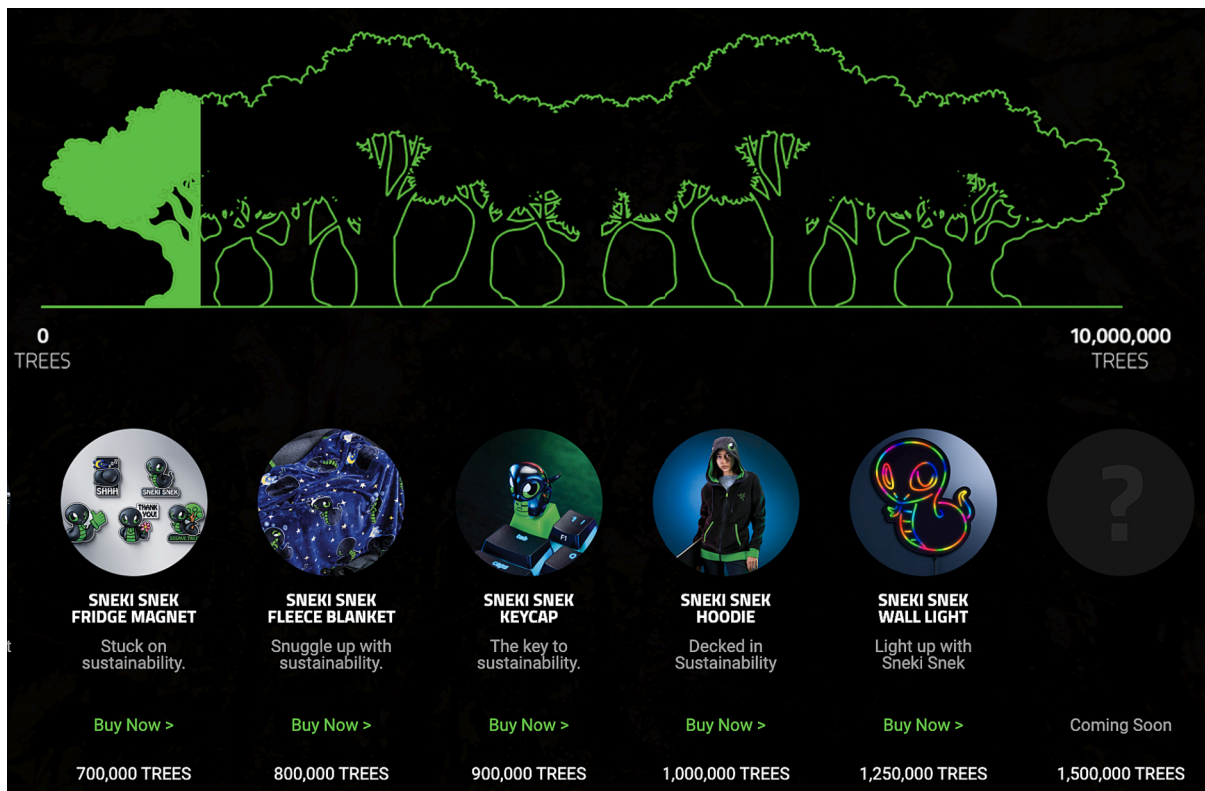


Fig. 5. Rallying fans to unlock Sneki Sneki merchandise with more purchase and more trees saved. (Source: <https://www.razer.com/gb-en/campaigns/sneki-sneki>; accessed 30 June 2023).



Fig. 6. Images from the Ant Forest game showing a virtual tree being grown (left), sites of actual trees being planted in China (middle), and choice of trees/plants suitable for arid environments (right). (Source: Ting, 2019)

technology to inspire greener actions in people's daily lives (Business Wire, 2021). It also inspired a similar initiative in the Philippines, where the leading mobile payments provider GCash has introduced GCash Forest through its GCash payment app (Chen, 2019).⁹

While these accolades are impressive, the gamified affordances of the Ant Forest app rely on users staying within the platform ecosystem of Ant Group and Alibaba. Almost all options for earning green energy points in Ant Forest (except for walking) are based on paying for services from Ant Group or the Alibaba conglomerate. For instance, green energy points can be earned from purchasing cinema tickets through the Alibaba-owned online platform Taopiaopiao, and not any other similar platform. For Ant Group and Alibaba, the gamified Ant Forest app has proved to be a particularly effective strategy in countering intermediary competition from WeChat Pay, the other highly popular mobile payment provider in China (Ecommerce Strategy China, 12 Oct 2018). The socialized structure of WeChat encourages continued usage and interaction within the WeChat ecosystem by using functions within the WeChat app to make daily payments, reach out to friends, communicate at work, follow and share the comments of friends, and so on. By introducing a game in Alipay that encourages frequent logins and connecting with other users, Ant Forest not only fosters environmental awareness and green behavior, it also encourages increased and sustained engagement with the Alibaba platform ecosystem. A typical complaint from participants is the limited and narrow specification of what constitutes pro-environmental behavior in the game (Chen and Cai, 2019). For instance, sorting household waste and recycling is not included in the Ant Forest reward list for green energy points, even though these are popular green concepts in Chinese society, presumably due to the challenge of tracking and accounting for such actions outside of the Alipay/Alibaba ecosystem. Many businesses, especially global brands in China such as Starbucks, Timberland and Estée Lauder, have also set up their own virtual forests within the Alipay app, where fans of the brands could join in collective efforts in tree planting, and in doing so display their lifestyle affiliation (Business Wire, 2021). This shows how gamification strategies, digital marketing and UX/UI design are shaping FinTech intermediation and the financial practices of corporate clients and consumers.

Through gaming elements and UX/UI design, Ant Forest encourages individuals to participate in low-carbon activities and communicate their actions and progress. The incentive mechanisms (e.g. accumulating green energy points, nurturing a virtual tree, earning seasonal items and decorations, ranking on leaderboards) give users satisfaction and pleasure through play, as well as feelings of accomplishment in contributing to environmental goals. The gamification strategy in Alipay caters to entertainment desires and encourages public participation in environmental causes, but it also fulfils an important business function of attracting and holding the attention of users within the Alipay payment platform and the wider Alibaba ecosystem. Ant Forest thus demonstrates the significance of gamification techniques in reshaping the logics and practices of intermediation, and competitive strategies of FinTech firms.

4. Conclusion

The above case examples highlight the growing use of gamification techniques in the practices of FinTech intermediation. Taken together, they show how gamification techniques deployed in FinTech intermediation mobilize socio-technical knowledges and commercial practices of behavioral science, digital marketing and UX/UI design, which are deployed by financial institutions and technology companies, and how these new forms of intermediation contribute to their competitive positions by capturing user attention and data and configuring user behavior. In this paper, we argue that attending to the gamification of FinTech economies has important implications for economic geography

research in terms of what and who counts as relevant business knowledge and actors in financial services. The gamification of FinTech intermediation in the above examples brings into view new forms of socio-technical knowledges, different types of firms that are presently overlooked by current conceptualization of the APS complex, and novel forms of intermediation which prioritize user attention and engagement. To develop the City of TMRW and deliver its playful intermediation strategy for digital banking, for example, TMRW draws heavily on UX/UI design and data analytics, whether through in-house teams, procuring digital solutions from B2B technology companies, or joint ventures and investments in start-up technology firms. Razer, meanwhile, build upon the company's gaming heritage to pursue a gamified intermediation strategy for FinTech expansion, by mobilizing its established expertise in UX as well as broader modes of digital marketing and fandom engagement. The role of gamification as intermediation between digital economies and everyday lives is most strongly exemplified in the Ant Forest app, which connects playful virtual tree-growing with transactional activities through a mobile payment app and the promotion of environmental awareness and action. Taken together, our conceptualization and case examples have furthered a critical understanding of what constitutes networked intermediation in FinTech economies (Bassens and Hendrikse, 2022; Lai and Samers, 2021). While existing financial institutions and APS firms (e.g. consultancy firms) are developing new capabilities in gaming, design and data analytics to better attend to user attention and behavior, new companies (e.g. UX/UI design firms, gaming companies) that might not fit traditional definitions of APS firms are also becoming significant actors in shaping the changing nature and practices of FinTech intermediation and financial services.

In examining how FinTech businesses deploy gamification techniques to advance their competitive intermediary positions, we have also sought to offer a broader geographical and sectoral focus, purposively moving beyond the US stock market investment apps upon which research has tended to concentrate to date. As we have shown through our case examples in Asia, gamified apps are used to mobilize a diverse range of everyday personal finance practices, such as saving with TMRW bank and making payments with Razer Gold and Alipay. Within the playful finance of gamified FinTech, then, the ostensible boundaries between fun and the practical problems of day-to-day finance are blurred for business purposes by intermediaries, but not necessarily as risky and speculative endeavors. Indeed, TMRW bank and Ant Forest seek to explicitly connect playful personal finance practices with more sober and ethical financial and lifestyle habits. However, it is worth noting that for each of our case study firms gamified apps afforded and rewarded certain practices of personal finance precisely because they also advance the business strategies of intermediation and market capture. At TMRW, the gamification of personal saving was rolled out as part of a corporate strategy to grow a new digital banking platform in regional markets. Razer's initial foray into payments and digital currency in gaming economies became the basis for a wider-ranging FinTech intermediation strategy which retains an emphasis on ludic encounters and playful elements of gaming culture and online fandom. Meanwhile, the incorporation of the Ant Forest game within Alipay encourages low-carbon user behavior in mobile payments, but embeds users into the Alibaba platform ecosystem in the face of competition from Tencent's WeChat Pay. Therefore, while these case examples show that gamification may have less sinister implications than those suggested by research on stock market investment apps, we still need to be cognizant of how gamification functions in the context of financial capitalism and competitive intermediary strategies of value capture.

Our illustrative examples were certainly not intended to be exhaustive, and we hope this paper will spur further critical analysis of gamification in FinTech intermediation and its implications for reconfiguring the intermediary roles of APS firms and their socio-cultural relations in financial economies. If these new forms of business knowledge and types of firms are becoming increasingly important in the gamification of

⁹ See <https://www.gcash.com/gforest>.

FinTech offerings, they also have important labor market implications for the APS sector, as demand grows for new types of specialist skills and business knowledge in behavioral science, digital marketing and UX/UI design. These labor market shifts will affect not only specialist design and marketing firms but could also become more pervasive across finance and technology companies, as seen in the above examples of TMRW and Razer. Another area for further research pertains to whether gamification, and growing digitalization of economic activities more broadly, could create a shift in the types of metrics and standards for measuring the performance of FinTech companies and products. Rather than more familiar measurements of deposits, fee income or net interest margins, other indicators prevalent in digital marketing such as Net Promoter Scores and App Store ratings may become more influential in shaping corporate intermediation strategies and the types of APS knowledge deemed important for demonstrating competencies and competitive performance.

Our focus on Asia in this paper has been informed by empirical observation of how the development and usage of gamified FinTech apps have been especially prominent compared to other geographical markets. In this respect, our choice of case examples from Asia could point towards future research into the variegated geographies of gamified intermediation across FinTech economies globally. We began this paper with the US-based example of Robinhood, and with media and regulatory responses to the GameStop saga that express social and economic concerns about the predatory and speculative character of gamified FinTech platforms (see also Tan, 2021). In our Asian case examples, in contrast, the embrace of gamification techniques would appear to sit more comfortably with widespread consumer enthusiasm for app-based solutions to financial and lifestyle goals in digital platform economies. While this is a broad brushed comparative observation, what is clear is that future research into the gamification of FinTech intermediation does need to give greater analytical attention to the regulatory, cultural and political contexts in which firms are making finance playful.

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CRediT authorship contribution statement

Karen P.Y. Lai: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing, Project administration, Funding acquisition. **Paul Langley:** Conceptualization, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data used are from public domain, e.g. websites, media reports, corporate publications, public events.

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