

Saving the Environment by Being “Green” with Fintech:

The contradictions between environmentalism and reality
in the case of Ant Forest

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Abstract

The conflict between climate and economic development is one of the most significant dilemmas of this era. Under the prevalent discourse of sustainable development and green economy, many believe that environmental problems can be addressed through market-based approaches under the current capitalist economic regime (Waters, 2008). The purpose of this thesis was to analyze the case of Ant Forest, a gamified green initiative launched by the biggest fintech company of China, of which the aim was claimed to be combating climate change through cultivating green lifestyle of the users. By conducting semi-structured interviews with the users from two Chinese cities, it was found that there was an inconsistency between the environmental value of Ant Forest and the real impacts it posed on the participants' consumptive behaviours.

Keywords: environment, green capitalism, fintech, Ant Forest, Marxist critiques

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1. INTRODUCTION

'Fintech has the potential to play a key role in accelerating the sustainable finance agenda and UNEPFI¹ is thrilled to welcome a champion of inclusive finance to its network.'

-Eric Usher, the Head of United Nations Environmental Programme

Financial Initiative (UNEPFI) (Unepfi.org, 2018)

'Alipay is not simply a tool for making payment, it is planting trees for the world! I get used to check my Alipay account much more often than before to accumulate the green energy points as quickly as possible, and ideally, within next month, I will have another tree in the desert.'

-Zhao, a user of Ant Forest²

1.1. A Tale of fintech and Ant Forest

The compound word of “fintech” consists of “financial” and “technology”, and it represents a new financial business model which provides more accessible financial service to people through applying new technologies, such as internet, big data, mobile technology, etc. (Schueffel, 2016, p32-54; He et al., 2017). Fintech has already posed tremendous challenges to traditional financial industries in the Chinese market and is believed to play an essential role in addressing climate problems and delivering both ecological and economic benefits (Castilla-Rubio, Zadek and Robins, 2016).

¹ United Nations Environmental Program Financial Initiative, a program initiated by UNEP which aims at promoting green finance in the world. See the website: <http://www.unepfi.org>

² An interviewee of this study

On August 2016, Ant Financial³ - the largest Chinese financial technology (i.e. fintech) company - launched a social gaming app called “Ant Forest”, which enables its users to have a chance to plant real trees in some remote areas in China. It depicts the carbon footprint of the consumers by tracking and analysing their consumption records (based on the data generated by Alipay - another affiliated sector of Ant Financial) and rewards their “green behaviors” for “green energy points”. As these points accumulate to certain levels, a real tree will be planted in the remote desert regions and a virtual certificate will be granted to the user in the app, and the user can see the forests where their trees are planted through satellite pictures and landscape photos which are updated every five hours. Apart from these, Ant Financial has further stated their ambitions: to develop Ant Forest into a personal carbon trading system of China in the future! (Ant Financial, 2017, p54-55).⁴

On January 2017, Ant Financial joined the UNEPFI network- a group consists of more than 200 various financial institution, of which the aim is at promoting green finance and sustainable development in the world. As the first fintech partner of this initiative, Ant Financial and UNEP FI co-launched a new program called Green Digital Finance Alliance which is committed to reshaping the financial system in a way that better compatible with the needs of environmental sustainability through exploring and applying the potential power of fintech-driven business innovations. According to the report published jointly by Ant Financial and UNEP (2017), from August 2016 to January 2017, only within six months, the number of registered users of Ant Forest Scheme has already reached 200 million, accounting for 44% of total

³ Ant Financial is founded by Alibaba-the biggest online commerce company in the world, and after the reorganization of internal business sectors in 2014, it has become a comprehensive fintech company specializes online consuming credit or other micro-credit services. (Antfin.com, 2018a)

⁴ Ant Forest has been fully developed into a tradable system, however its controlling entity-Ant Financial has explicitly stated the idea in many occasions. For example, in the Ant Financial 2016 Social Responsible Report, it is clearly pointed out that the idea of Ant Forest ‘originates from the carbon account of Alipay [...], the Alliance will seek to extend Ant Forest’s carbon account to the global level.’

Alipay users; by promoting “green behavior” among users, 150,000 tons of carbon emissions are deducted; and until January 2017 over one million trees have been planted in Inner Mongolia by Ant Forest program. Additionally, these numbers are increasing at a geometric rate: according to the Sustainability Report issued by Ant Financial (2017, p54-55)⁵, by the end of April 2017, only three months later, the participants of Ant Forest have increased to 220 million; the carbon emission deduction contributed by the users has amounted to 670,000 tons; and 845 million trees have been planted in the real world. So far, everything about this project looks so promising that Eric Usher, the Head of UNEP FI, even made such a statement: ‘*Ant Financial can enable financial institutions to apply innovation to help deliver finance that supports a low-carbon, sustainable economy. It is also raising awareness of sustainability among its users and encouraging individuals to adopt sustainable lifestyles.*’ (Unepfi.org, 2018)

1.2. Fintech in the Green economy

The conflict between climate and economic development is one of the most significant dilemmas of this era. Under the prevalent discourse of sustainable development and green economy, many believe that environmental problems can be addressed through market-based approaches under the current capitalist economic regime (Waters, 2008). During the global financial crisis between 2008 and 2012, the discourse of “green economy” started to gain its popularity among economic and political arena (Tienhaara, 2013). Green economy is defined by UNEP (2011) as ‘one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive’. One can learn from the definition that rather than a precisely defined concept, green economy is more like an umbrella term which contains various dimensions such as green marketing (Papadas, Avlonitis and

⁵ The Ant Financial 2016 Sustainability Report is issued in May 2017, containing some data of 2017.

Carrigan, 2017; Fuentes, 2015; Peattie and Belz, 2010), green energy (Gibson, Wilman and Laurance, 2017; Oncel, 2017), green technology (Yang et al., 2018;), green finance (Knuth, 2018; Ng, 2018), carbon trading (Lederer, 2012), green consumption (Gilg, Barr and Ford, 2005; Peattie, 2010), etc.

Among these elements, “green consumption” is a highly appealing term to many individual customers since it enables them to engage in pro-environmental actions to address the ecologic crisis through consuming environmentally-friendly products based on their environmental mentality (Sachdeva, Jordan and Mazar, 2015). From this sense, Ant Forest can be regarded as the very program which well highlights the themes of green economy and green consumption: it is an inclusive green program initiated by a mega-sized fintech company, which aims at combating environmental crisis through cultivating green consuming behaviors of its users and planting trees in the desert (Ant Financial, 2017).

On the other hand, for many people, the capability of capitalism to reach environmental sustainability remains in significant doubt, and this is not surprising given the fact that the environment has been degrading at a considerable rate during the decades after the Brundtland Reports⁶ been published in 1987 from which on the concept of sustainable development has been internationally known and accepted (Zaccai, 2012, p.79).The recent decade has seen a flourishing body of critical literature of both empirical cases and theories from a broadly Marxian perspective questioning the capability of the capitalist green consumption to delivery ecological sustainability (Scales, 2014, p.477).

Fintech, as a newly emerging business model, has not been adequately examined concerning its impact on the environment in the real world. The ever-increasing

⁶ Also known as *Our Common Future*

power and influence of the fintech industry in Chinese society make it significantly meaningful to study the influence of the fintech green initiative. China's post reform political ideology has been a matter of debate for many scholars, but this debate is beyond the scope of this paper. The terms such as "capitalist" and "capitalism" appearing in this thesis only refer to dominant market-driven economic structure in current Chinese society. This study provides an interesting empirical case for discussing and re-thinking the intrinsic logic of capitalist environmentalism, with particular emphasis on the contradictions between its inclusiveness and power inequality, "green component" and the for-profit nature, and the consequential inconsistency reflected on the consuming behaviours and environmentalist mentality of the individual participants.

1.3. Aim and research questions

The study aims at looking critically at the fintech green initiative from a Marxian theoretical perspective. The objective of the thesis is to examine the Ant forest program from various dimensions to see how it influences its users regarding their understanding of green consumption and their consumptive behaviours in everyday life, and this study is based on a conceptual framework derived from both the Marxian theories and game studies.

One unique attribute of Ant Forest is that it is a gamified program, played, shared and circulated on mobile internet devices, and this is seen as the key success factor by the management of Ant Financial (Ant Financial & UNEP, 2017, p13). Espen Aarseth, a researcher specialized in computer game studies from IT University of Copenhagen, has suggested a theoretical approach to game analysis: to study a game as a process rather than an objective, from the dimensions of game-play (i.e. the players, gaming experience), game-structure (i.e. rules) and game-world (i.e. background stories) (Aarseth, 2003, p2). Although this is not a thesis of ludology (a.k.a. game studies)

which means ludological theories will not play a dominant role here, the three-dimensional approach provides an interesting and useful base which helps to form partially the conceptual framework of this thesis for at least two reasons. Firstly, the way that it sees a game as a process rather than an object implies Ant Forest can be studied from a much more dynamic perspective through analysing the game-play experience - the users' constant interaction with the app - based on the data collected via semi-structured interviews. Moreover, by exploring users' perceptions of the background stories (game-world) and behavioral change orientated by the rules (game-structure), the thesis explains how users understand Ant Forest and fit themselves into the environmentalism discoursed by it, and how these users rationalize their "green behaviors" and how they become increasingly dependent on the Ant Financial company as a result of enforcing the gaming strategies made by it.

This thesis answers the following research questions:

1. How do users navigate their value within the settings of Ant Forest?
2. How do the game-rules affect the users regarding their consuming behaviours and perception of 'a greener lifestyle'?
3. How does Ant Forest create inconsistency between the environmental goals and consumer behaviours of the users?

1.4. Background: Alibaba Group and the Ant Financial family

In the past two decades, the Chinese e-commerce and internet finance industries have been developed at an incredible rate. In 1999, the Alibaba group was founded by Jack Ma and in the following decades it has been developed into the biggest e-commerce company in China (Alibabagroup.com, 2018). At the beginning of 2018, the market cap of Alibaba group reached USD 510 billion (Bloomberg.com, 2018). Taobao (includes Taobao market-place and Tmall) is a subsidiary of Alibaba and is the biggest Chinese domestic online shopping platform. According to the data from

Alibaba's *Annual Report (2017)*, the active buyer accounts that had one or more confirmed orders in the year of 2016 reached 443 million and the total value of confirmed orders of products and services on Taobao in the financial year ended by 31 March 2017 amounted to 3,767 billion RMB.

Alipay (Zhifubao) is biggest a third-party online and mobile payment platform of China, which was first launched in 2004 by Jack Ma to facilitate the online payment of the transactions on Taobao, and now it has become a comprehensive financial platform with 520 million active users and over 200 domestic financial institution partners (Antfin.com, 2018b). Alipay's mobile app supports both online and offline in-store payment, and in addition to the functions of a digital wallet, it is also a multifunctional platform on which the users can book hotels, hail taxis, pay utility bills, make appointments with doctors and so on (ibid). Moreover, Alipay app also shares some features in common with social software such as WhatsApp. For example, it enables the users to create a friend list and to do online chatting, to send videos and photos, and even to share locations with friends.

In 2014, Alipay was integrated into Ant Financial which is another affiliate of Alibaba and the biggest fintech company in China. The officially stated aim of Ant Forest is to provide consumers and small businesses with inclusive financial services by creating a credit system and financial-service platform through technology (Antfin.com, 2018c). Ant Financial has a very broad business scope and different sectors to perform these tasks. For example, it has Ant Fortune (mayi caifu), MYbank (wangshang yinhang), Zhima Credit (Zhima xinyong) and Ant Credit Pay (Mayi huabei) to offer wealth management, banking, credit-scoring, and small loan services for both individual consumers and small business owner. Many of these services are very popular among the users. For example, Zhima Credit is a credit-scoring system of which the aim is claimed to be 'providing the consumers with equal and inclusive

credit-scoring service' (Xin.xin, 2018a). Users with high scores in this system can rent power banks, bikes even cars without paying the deposit. And the scores are even associated with the Social Credit System established by the Chinese government (Xin.xin, 2018b). The portals of all these functions are embedded in Alipay mobile app, which enables users to access various financial services through one application and one account. Besides these, Ant Financial also provides cloud computing services for business entities based on its vast database of users' transaction records (ibid).

On August 2016, Ant Forest was launched as the initial phase of a personal carbon account system. At this stage, it appears as a gamified program which, according to Ant Financial, aims at cultivating "green lifestyle" of users (UNEP & Ant Financial, 2017, V). The game rules require the players to act in certain ways such as walking, hiring common-shared bikes and even making offline in-store payment with Alipay app to collect different amount of "green energy points". All these actions are narrated as green behaviours by Ant Forest. For example, walking and hiring bikes can reduce the carbon emissions, and making payment in stores with Alipay by scanning the app at the cashier, according to Ant Forest, can reduce the use of paper receipts. Different actions can generate certain amounts of 'green energy points' based on, according to the illustration of Ant Forest, how much carbon emission is expected to reduce by the action. And these points can only be collected after certain periods of time, from several minutes to twenty-four hours. Once the points are ready to be collected, both the users and his or her friends in Ant Forest will be notified by the system, therefore if someone fails to collect the points on time, they may be stolen by his or her friends.

At the beginning of the game, each player can choose a particular variety of visual sapling in their account, and it is growing bigger and bigger as the amount of "green energy points" increase. As the "green energy points" being accumulated to a certain

level, the visual sapling becomes a mature tree and the player is able to donate the tree to one of several forestry centers established by Ant Forest, and a real tree of the same kind as the visual tree will be planted there. Like most other products of Ant Financial, the portal of Ant Forest is integrated into Alipay app, and it depicts carbon footprint of consumers based on the consuming records derived from their Alipay account.

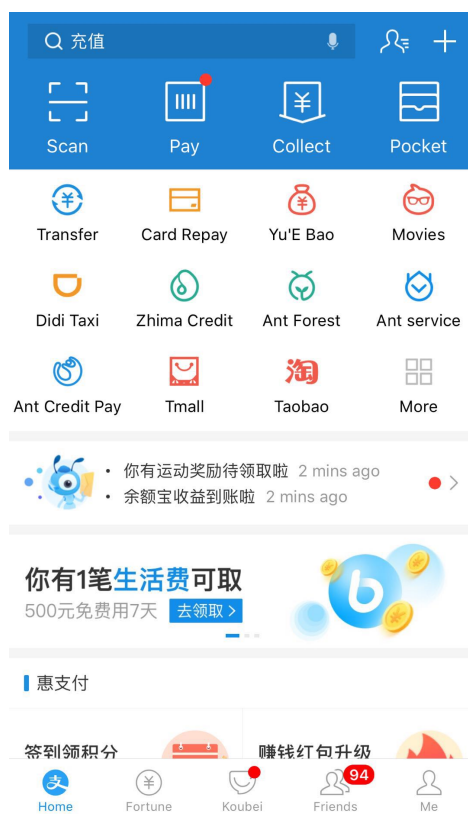


Image 1: the image of the interface of Alipay app

1.5. Outline of thesis

The remaining thesis is structured as follows: Chapter 2 contextualizes the study in relevant literature, with a particular focus on the critiques of the nature of capitalist economy, capitalist environmentalism and green consumption; then, Chapter 3 is an account of the research method, providing detailed illustrations of research method choice and data collections; furthermore, in Chapter 4, the data is analyzed comprehensively; and finally, after a discussion of the data, a conclusion is drawn based on the theoretical framework and the data analysis in Chapter 5.

2. LITERATURE REVIEW

To understand how the Ant Forest, as a fintech green initiative, associated with environment, it is helpful to begin by exploring the Marxian critical literature on the relationship between capitalist economic system and the ecology, and this helps to illustrate the fundamental contradictions embedded in capitalism from a macro perspective. Following this, an examination of critical researches into ‘green capitalism’ helps to map out the inconsistent nature of capitalist environmentalism. Then, critical studies on the concept of green consumerism which underpin the ruptures between people and environment created by consumerism are reviewed. Additionally, by referring to the critical literature on green consumption by Scales (2014), this paper also reviews three critical concepts: metabolic rift, treadmill effect of production and commodity fetishism, and these three concepts lay the theoretical ground for this thesis.

2.1. The contradictions of capitalism and the environment

The conflict between climate and economic development is one of the most significant dilemmas of this era. Under the prevalent discourse of sustainable development and green economy, many believe that environmental problems can be addressed through market-based approaches, such as carbon trading, under the current capitalist economic regime (see Waters, 2008; Newell and Paterson, 2010; Newell, 2010). However, the ability of the capitalist market mechanism to deliver environmental well-being for all social groups have been questioned by many due to the doubts of its nature of restless pursuit of profit and endless expansion of production (Scales, 2014).

For gaining profit and competitiveness, many companies are likely to adopt the low-cost strategies which include choosing the cheapest processes which are likely to

emphasise solely on profitability in short-run even if these processes cause damages to the society and the environment (Bell, 2015; Dawson, 2010). On the other hand, growth is the ultimate goal of the capitalist economy, but this is not compatible with the environmental goal of all human beings.

According to Dawson (2010), Marx employs the notion of ecological metabolism to illustrate that the environment, including living organisms and the physical aspects, is integrated as a metabolic system within which nutrients and energy can be efficiently cycled. However, this metabolic relation between human and the environment has been ruptured since the human beings within capitalist society are materially separated from the natural conditions that formed the basis for their existence, and the separation of city and rural area under capitalism has created severe alienation of population from the soil (Foster, 2002). The British high farming is mentioned by many theorists as a typical example to illustrate how metabolic rifts are created in capitalist agricultural production (see Forster, 2002; Dawson2010; Clark and Foster, 2009). In the 19th century, the modern agricultural industry produced large quantities of crops and transported them to cities for supporting the burgeoning populations created by industrialization and urbanization (Magdoff, 2002). In this process, the nutrients of the soil were depleted as a result of over-use of land and a failure of the return of the residual materials back to the land of rural areas, and meanwhile, the food wastes accumulated in the city, caused environmental problems, such as landfill of garbage and water pollution in towns (Foster, 2002).

Furthermore, in the global capitalist world, the deterioration of soil in European countries had profoundly environmental implications over the whole world. For example, to restore the fertility of the soil in Europe to maintain and develop the capitalist agricultural production, guano and nitrates, as a natural fertilizer, were exploited and transported from South-America to Europe. This ecologically unequal

exchange of material resulted in degradation of the environment in the peripheral countries, creating a global metabolic rift between the cores and the peripheries (Clark and Foster, 2009).

Metabolic rift is not limited to agricultural production. Studies on marine ecology have revealed that the human-ocean relation has been changed by the technologies and the capitalist productive system, and the improved means and the constant expansion of production enhances the exploitation of nature (Scales, 2014). For example, the distant water trawlers with refrigeration systems which allow trans-continent transportation have led to 'cumulative effects of marine ecological degradation' (Clausen and Clark, 2005, pp.440).

Based on the inspiration of metabolic rift, O'Conner (1991) demonstrates that capitalism is determined to fail in the form of the economic crisis since it impairs its conditions of production, and this is called the second contradiction of capitalism. According to O'Conner (1991), the application and transformation of natural conditions of production are crucial for capitalist production, and the increasing scarcities of nature decide that the production can only perform at an increasingly expensive rate. Thus, degradation of the natural conditions of production generates rising costs for capitalism and will ultimately leads to an economic crisis. According to the concept of second contradiction of capitalism, a feedback mechanism starts to act when the ecological crisis is translated into an economic crisis: firstly, as illustrated earlier, undermining of the conditions of production results in rising cost of production, and for controlling the growing cost associated with this, capital has to address the environmental problems; and secondly, there are social movements led by impairment of conditions of productions which forces the system to change and to internalize the externalities (ibid).

Beyond the implication of the economic crises associated with the impairment of conditions of production, Foster (2002) further argues that it should not be ignored the possibility that capitalism tends to generate and accumulate profit from environmental degradation, and ultimately destroys the whole ecological environment of the planet. He believes that the threat is prominent since the environment is not only meaningful as a necessary precondition for economic production, it is the precondition of living for all beings in the world, however now it is incorporated into the global accumulation process and constantly degraded (ibid). He argues that ecological degradation should not be seen mainly via the economic perspective, and it is ‘as basic to capitalism as the pursuit of profits itself’ (Foster, 2002, pp.8), which means it is impossible for capitalism to deliver environmental goodness.

Furthermore, the contradiction between economic growth and environmental well-being is inherent within capitalist system per se, which means it is not restricted to a particular phase of economic development or a certain country, but throughout the entire timeline of the capitalism. Bell (2015) studies seven different countries with varying depth of marketization, and argues that whatever the depth of marketization, the failure of capitalism to delivery environmental well-being is determined. Likewise, the environmentally devastating effects of capitalism can be analysed from the more macro perspective of the capitalist world system and global inequality (Mol and Spaargaren, 2000). The unequal material exchange flow in the system has created an ecological rapture between the core countries and the peripheries, and stops only when the natural resources of the peripheral countries come to exhausted (Moore, 2000). For instance, Cark and Foster (2009) study the guano/nitrates trade in the 19th century and argue that the capitalist economic system, from two perspectives, posed impacts on the environment. Firstly, the industrial farming activities led to a decline of soil fertility in Britain. And then, to replenish the nutrients of the soil, guano of Peru was exploited and transported to Europe, which caused resource exhaustion and

environmental devastation in Peru. As a result of this global guano trading system, an ecological rift between the core states and the peripheral states was established, and this was facilitated by the highly unequal material flow from the peripheries to the cores.

2.2. Is 'green capitalism' green?

As introduced above, many researchers believe that the capitalism per se is in contradiction with the environment well-being since its endlessly expansionary logic and for-profit nature is incompatible with the real-world fact that the availability of natural resources is not infinite. Meanwhile, the capitalist mechanisms have been held up as having the potential to fix the ecological problems by many others, and this has resulted in large amounts of studies of green capitalism which aims at channeling capitalism with the environmental ends.

The notion of 'green capitalism' can be reliably dated back to the creation of the World Bank's Global Environmental Facility in 1991, and it is defined as 'a set of responses to environmental change and environmentalism that relies on harnessing capital investment, individual choice, and entrepreneurial innovation to the green cause' (Prudham, 2009, pp.1595). From this definition, one can learn that there is an implication embedded within it that capitalism is compatible with environmentalism , and hence the term of 'green capitalism' has a semiotic dimension (ibid) which obscures the second fundamental contradictions of capitalist economic system (O'Conner, 1991) and advocates that sustainability can be delivered based on current capitalist structure. However, still many believe that green capitalism cannot effectively solve environmental contradictions since it seeks ceaseless expanding on a finite ecological base (Dawson, 2010).

One of the appealing promises of 'green capitalism' is dematerialization which

implies economic growth can be decoupled with the exploitation of natural resources through technological and social innovations. However, this argument has been already challenged by empirical cases. Næss and Høyer, (2009) study the several cases in Nordic countries where people try to decouple economic growth with environmental degradation by enhancing eco-efficiency and adopting substitution. They conclude that the natural sustainability is not compatible with long-term economic growth since the savings of increased efficiency of production and resource application is offset, or even over-compensated, by the increasing demands and consumption triggered by higher productivity and lower costs.

According to Scales (2014), this can be illustrated based on the concept of ‘treadmill of production’, which like the notion of the metabolic rift, underpins the environmental implications of the capitalist economic system. Schnaiberg (1980) notices that during the post-war era, the economic system of US started to change greatly that along with the economic growth during that period, the middle-class population had dramatically increased and their growingly consumptive power further led to a resource-based expansion of production. Schnaiberg explains how the new production system poses impacts on the environment in two respects. Firstly, more energy and raw materials are needed in the capital-intensive production which is designed for production maximization, and this leads to the depletion of the natural resource. (Schnaiberg, Pellow and Weinberg, 2002). Additionally, as the production process becomes increasingly complexed, more chemical technologies are adopted to transform the materials into final products, and this feature of modern production results in the environmental pollution (ibid.). In other words, the ecology is dragged into an unstoppable treadmill that as the companies gain more profits from higher productivity based on more advanced technologies, they tend to reinvest in expansion of business and production, and thus require greater exploitation of natural resources, and meanwhile, more toxic chemical pollutant and other forms of waste are produced

and emitted into the environment (ibid.).

Based on the treadmill effects of production, Schnaiberg, Pellow and Weinberg (2002) outline several features of capitalist environmentalism which obstacle the society to reach ecological modernisation. For example, economic growth is widely believed as the core determinant in policy-making by the powerful actors in the capitalist economy, such as governments and social elites. In many cases, capitalist governments regard the environmental crises as business opportunities and thus make and enforce environmental policies which match the for-profit nature of main actors within the economy, such as carbon-trading, geoengineering and nuclear power plants (Bell, 2015). Besides, governments need to ensure the ability of national production to generate sufficient profits to induce investments, to maintain a stable level of salaries and to generate enough tax revenue (Schnaiberg, Pellow and Weinberg, 2002). Therefore, governments can only play a limited role in regulating environmental policies (Bell, 2015). Meanwhile, the general public, like consumers, can rarely have a strong voice in the related environmental policy-making process (Scales, 2012).

Moreover, in the capitalist market economy, large wealth tends to flow to the elites of the societies, and since the level of income often determines the access to environmental resources and the ability of avoiding environmental harms (Bell, 2015), the environmental hazards tend to disproportionately threaten the life of those who are economically disadvantageous and living in remote areas (Field, 1997). However, the social elite classes who play significant roles in the green economy, based on their interests, advocate for the suggestion that more sustainable futures can be secured through investment and entrepreneurial innovation (Prudham, 2009). And this elite-dominated green value is prevailing, influencing the public opinion and environmental policy-making of the state (Bell, 2015).

Addition to this, market-based approaches and technological innovations are thought to be the best cost-effective scenarios for solving social and ecological problems (Tietenburg, 2012). Therefore, economic expansion is favourable since it is believed to be able to reduce social and ecological problems, and this has justified and fastened the treadmill of production, and fallen into the logic of ‘accumulation for accumulation’s sake’ (Prudham, 2009, pp.1594).

Many empirical cases have provided supporting evidence for the critical arguments from various perspectives. One of the most influential cases of privatisation of nature of which the claimed target is to reduce external costs to combat climate change is the carbon trading system. However, based on researches into some empirical cases, the ecological commodification is rather like profit opportunities for investment than an effective means of reducing carbon dioxide emissions (Böhm, Misoczky and Moog, 2012; Lohmann, 2009).

Likewise, under the capitalist economic system, the private industries tend to develop only those technologies which can generate profit for the business since the competitiveness and profit is vital for surviving for any business. Therefore, production and consumption are driven in such a way which aims at sustaining the whole system rather than satisfying the social needs or environmental well-being (Bell, 2015). For instance, according to Prudham (2009), the technology which transforms agricultural waste into fuel damages the nutrients of lands in the long-run, causing ecological problems. Besides, the production of biofuel threatens the availability of arable land for crops and leads to deforestation. Also, the rising price of food crops results in famine and some other social problems. Most importantly, the energy which consumed to produce bio-fuel, including cultivation, harvesting, and conversion, is mainly from fossil fuels and in many cases, even more than the energy yielded by the final product of biofuel (ibid.). This means the production of renewable

fuel disguises the nonrenewable elements and creates new social and environmental crises.

2.3. Saving the world by buying green?

Expansion of consumption is also crucial for businesses to survive and prosper in a capitalist economic system, and as introduced above, the consumption-driven economic growth imposes huge pressure on natural resources and caused environmental degradations (Schnaiberg, Pellow and Weinberg, 2002). And these ecological crises have given birth to the notion of sustainable/ green consumption (Tripathi and Singh, 2016). This concept is not newly emergent. According to Tripathi and Singh (2016), dating back to 1992, the concept of sustainable consumption and production had been acknowledged and regarded as a prior goal for nations. Additionally, according to Peattie (1992), green consumerism is defined as ‘the purchasing and non-purchasing decisions made by consumers, based at least partly on environmental or social criteria’ (Peattie, 1992, pp.118). It is clear from the definition that green consumption emphasizes individual choice of purchasing based on one’s environmental value, and this implies a shift of responsibility of addressing environmental degradation from the producers to consumers (Muldoon, 2006). According to Maniates (2001) this individualization of responsibility obscures the focus of environmental activism and constrains the space of institutional change for addressing environmental and related social problems. Besides, green consumption is a market-based approach, which means it is rooted in the capitalist system, and this has predetermined that it is unable to address the paradox of limited resources and expansion of economy (ibid.).

Interestingly, besides these critiques, even by those researchers who advocate for green consumption, it is acknowledged that green consumption creates dilemmas for green consumers in their everyday life. Connolly and Prothero (2008) study the

consumerism as every-day politics, and argue that a high level of individualization, a sense of environmental responsibility and a feeling of empowerment in dealing with ecological risks lay the foreground of green consumption. However, such feelings of being individually responsible often accompanied by doubts and insecurities, and this raises questions even for people who have a deep sense of green awareness when they are making purchasing decisions that what is the right choices (ibid.).

Also, from a more Marxian perspective, green consumerism is also challenged by the concepts of commodity fetishism (see Scales, 2014; Kosoy and Corbera, 2010). This concept is borrowed by Karl Marx from anthropology which describes the deviation of exchange-value from use-value of goods due to the alienation of human labour from the final products (Kosoy and Corbera, 2010). Scales (2014) further applies this concept to criticise the notion of green consumption and argue that green consumerism alters the relationship between consumers and the goods they consume. And the tendency of capitalism to ‘fetishise’ commodities does not only reflect the alienation of workers from the production but also reflect an alienation of consumers from the production process. In other words, consumers know little about the goods they consume, such as the places of production, the workers processed it, or the working condition of these workers (ibid.). According to Carrier (2010) commodity fetishism makes people value goods at their exchange-value rather than use-value, and are likely to imagine the commodities with some characteristics they don’t inherently have. Unlike the traditional way to alienate consumers from the production process, green consumption is based on the idea of providing more information of the goods to consumers and make them feel empowered and responsible for the environment and thus make a purchasing decision based on their environmental intention (Sachdeva, Jordan and Mazar, 2015). However, the studies of Morris and Kirwan (2010) reveals that by simplifying complicated environmental realities into symbolic forms of information, green consumerism actually fetishise commodities in

new ways: customers are guided to pay attention to some specific information about the goods but ignore some other, and the overlooked information may be highly relevant for consumers to learn the whole story of production and the environmental implication of their consumptive choices.

2.4. Fintech and Ant Forest

The key arguments which structure literature around the critical studies on capitalism, capitalist environmentalism and green consumption illustrate the incompatibility of capitalist economic structure with environment. Human beings within capitalist society are materially separated from the natural conditions which form the basis for their surviving due to the production pattern and urbanization (Foster, 2002). Moreover, the ecology has been involved into an unstoppable treadmill of production which leads to greater demand of natural resources and larger scale of pollution (Schnaiberg, Pellow and Weinberg, 2002). Further, green consumption tends to simplify complexed environmental issues into symbolic forms of information, and thus results in alienation of consumers from goods, as well as commodity fetishization in a new way. And this makes the consumers value and make so-called green consumptive decisions based on imprecise or fragmentary information (Morris and Kirwan, 2010).

All these elements form a useful map for analysing the fintech green initiative of Ant Forest from a theoretical perspective. Ant Financial, as the biggest fintech company of China, is believed to have the potential to significantly change the landscape of existing financial industry by transforming the current cost structure through technological innovations, such as internet, mobile technology and big data (He et al., 2017). According to the report issued by McKinsey & Company (2018), technological advantages provide fintech companies with more advanced modes of customer acquisition, effectiveness in cost reduction and innovative application of data. For fintech companies, all these attributes enable them to compete with traditional

banking industry (ibid). Like for any other capitalist industry, competition, expansion and profit maximization form the basic logic for fintech industry. As a green initiative launched by Ant Financial, Ant Forest programme can be seen as a typical capitalist environmental initiative which highlights market-based approaches and technological innovations. And its environmentalism and real influence upon the users also can be explored based on the theoretical framework derived from the literature.

3. RESEARCH METHODS

As a fintech green initiative, Ant Forest is claimed by its management and international organisations to be a promising project for combating environmental degradation through cultivating and promoting green behaviours among its users (UNEP & Ant Financial, 2017). However, as a programme which promotes the concept of green consumption, it is necessary to examine Ant Forest from the viewpoint of the participants, for their individual perception and behaviour forms the basis of green consumption (Sachdeva, Jordan and Mazar, 2015).

This research draws on the three-dimension approach (Aarseth, 2003, p.2) to study Ant Forest by studying the gaming experience of game-players and this is facilitated by semi-structured interviews. By conducting interviews with the users (game player), the author tries to explore the game, including the game stories and rules created by Ant Forest, from the perspective of the users, to see how the insistency embedded in the game creates a knowledge gap, and further creates a rift between people and the nature. In total, ten interviews were conducted, with five users from Beijing and another five from Chongqing. This chapter is divided into four parts: to begin with; the case study method is introduced; secondly all steps taken to recruited and conduct the interviews are illustrated in detail; thirdly, the process about the data analysis is discussed; the last part addresses the role of the researcher and ethical issues.

3.1 Ant Forest as a case example

An instrumental case study is a method which can provide insight into a particular issue, develop new theories or test out existing theory (Grandy, 2010). The case of Ant Forest is a suitable example and it provides the study with an insight into the very nature of the green initiative of fintech, as it well reflects both the attributes of the technology-powered business model with keywords such as mobile-internet and big-data, and the inherent disadvantages of other capitalist green agenda, such as power imbalance and exploitation. Apart from these, a large number of participants and fast-growing rate of Ant Forest further justifies this specific case because its prevalence among general public ensures a high level of inclusiveness which makes it a rich site of analysis.

The generalizability which means the findings of research can be generalised beyond the confined context in which the research is carried out is a major concern when a researcher applies a qualitative case study. (Bryman, 2012 p.176; Silverman, 2010, p. 139). According to Grandy (2010), an instrumental case study can generate its transferability by exploring in-depth a particular case and identifying patterns and themes and comparing these with other existing researched cases. He also provides an example to illustrate that triangulation through other research methods such as interview is also an effective way to produce trustworthiness (ibid). Thus, as the major goal of this thesis is to extend the application of existing body of Marxian critical theories, by conducting semi-structured interviews within the case, this thesis can present an explanatorily powerful example of how capitalist environmentalism fails to meet its stated objective.

3.2. Semi-structured interview: examining Ant Forest through eyes of players

As illustrated above, the semi-structured interview can effectively improve the trustworthiness of a case example (Grandy, 2010), and since the objective of this

thesis is to look critically at the fintech-based green initiative from the perspective of users, interview method can be applied as a suitable tool. For social research interview enables the author to obtain comprehensive forms of information from the interviewees, such as behavior, attitudes, norms and values (Bryman, 2012, p.209) and the semi-structured form further facilitates this process with much more flexibility (ibid., p.472), which equips the author with a tool to look into detail at the users' participation in Ant Forest.

3.2.1. Piloting interviews

In this study, all ten interviews were conducted during the fieldwork in Beijing and Chongqing and all of them were taken in person. Before started the formal interviews, the author piloted two interviews by telephone based on a drafted interview schedule, and this was proven to be much helpful for the author to test interview flows and gain experience (ibid., p.474). Several problems were revealed by the pilot interviews. One was that the interviewees were, to some degree, reluctant to have such a long conversation on the phone: the first interviewee terminated the interview and explained that he had something emerging to do, and the other made a similar complaint, in a very polite way, and invited the author to her office or a coffee place nearby to meet in person, because she thought it took 'too long to talk about in the phone'. Besides this, although the issue of confidentiality was illustrated in advance to the interviewees, they still had many concerns about providing some detailed data regarding their consumption behaviour, especially the amount spent on online shopping. Moreover, the author found an interesting phenomenon which might undermine the validity of the interview that when the participants were informed about the purpose of the thesis was to study something related to "green capitalism" (绿色资本主义), they tended to give negative descriptions about Ant Forest. According to their feedback, they thought it was natural to connect capitalism with the terms such as "oppression", "greedy" and "bullying" based on their past

knowledge.

Drawing on the feedback from the pilot interviews, the author could determine that all the interviews ought to be conducted in person; and instead of asking detailed consuming data, the author re-formulated some interview questions in a more trend-focus and descriptive way; moreover, the explanation of the research was modified more neutrally, avoiding using some words which were born "evil" in the Chinese context.

3.2.2. Sampling and recruitment

According to Kvale and Brinkmann (2009, p. 102), the first step to conducting an interview inquiry is thematising, during which the researcher needs to formulate the objective of research and conceptualise the theme to be studied. Therefore, a revisit to the research questions was the starting point for carrying out the interviews, and further determined the way and criteria of sampling. The main objective of this thesis was to look critically at Ant Forest by exploring the in-depth gaming experience of users. Thus participation formed the basic criteria for sampling. Since the study was based on analysing individual game-play experience (e.g. perception of the game-world and reactions to game rules), there was an openness to demographic distribution of gender and age. However, some factors related to the design of the game were taken into account: there were locality-based differences in game-rules of Ant Forest, both direct and indirect. For example, according to the rules, private vehicle owners could be rewarded green energy points by voluntarily stopping using their cars, and this was explicitly stated to be restricted to Beijing in the official gaming guide. Likewise, hiring common-shared bikes was one of the major ways to accumulate rewarding points. However, the availability of the bike-renting service was highly dependent on localities, and hence the choice of some users was implicitly restricted. Since these factors would significantly affect users' gaming strategies and

behaviours, they also play significant roles in sampling.

The locality had been limited to Beijing since it was a highly developed city in China and people there were diversified and tended to be open-minded to new ideas and initiatives like Ant Forest. Later on, based on the preliminary investigation on Ant Forest app, it was known that Chongqing was a developed city where the shared-bike service was almost unavailable due to the low market-demand caused by its hilly terrain, which meant users here needed to adopt strategies different from their peers in Beijing to gain rewards. Therefore, the sample range extended to individual participants in Chongqing. While it is impossible to say that this can create a full view of Ant Forest users, it indeed produces a wider picture of Ant Forest users and their gaming experiences, allowing for a deeper understanding of how they think of and react to the game of Ant Forest.

Based on above factors, the sampling process was carried out, drawing on the elements of both convenience sampling method and snowballing method (Bryman, 2012, p.201-202), and this process was partly facilitated by the friend list, also called 'ranking list', of the Ant Forest app. The first interviewee was a friend of the author, as well as an active user of Ant Forest and she further referred a friend chosen from the friend-list of her Ant Forest account to be the next interviewee, and this process was repeated several times until the number of samples reached five. The same method was applied in the recruitment in Chongqing.

The qualitative semi-structured interview is applied to examine Ant Forest from the perspective of users by exploring their gaming experience, and the data is generated from the process of interaction between the researcher and interviewees (Glesne, 2011, p.102; Kvale and Brinkmann, 2009, p.82). Interview technique and relevant knowledge about the subject is a significant determinant of the quality of interview

(Kvale and Brinkmann, 2009, p.82) and rich data can be elicited through an in-depth interview by applying techniques such as making an interview guide, setting an interview stage and employing 'second question' skills which are to raise a followed-up question based on 'active listening' to the previous answer of the interviewees (ibid. p. 123-140). Drawing on these techniques and pilot study of Ant Forest, the interviews with 10 Ant Forest users can produce data of reliable quality. Moreover, the sample size was decided based on the principle of saturation, which meant the data collection reached a point when nothing more can be contributed to the theory building by further data collection (Bryman, 2009, p.760). According to Guest et al. (2006), data saturation can be understood as the point when no new codes are produced through further data collection, and data saturation can be achieved based on quite small samples. Although Rudestam and Newton (2007) argue that saturation of data can never be fully achieved, it can work as a useful reference to which the researcher can make a reasonable judgement about the adequacy of data. Based on this principle, memos and recordings of the interview were constantly reviewed after each interview to generate thematic groups (i.e. codes) and to see whether enough data were collected. After ten interviews, codes started to repeat which implies that the saturation point was approached.

3.2.3. Interviews

All of the ten semi-structured interviews (Bryman, 2012, p. 469) were conducted in person, and the average duration was 30 minutes. These interviews were carried out in Mandarin and Chongqing dialect and then translated into English. Within the ten interviewees, seven were active users who engaged the game every day, or even multiple times a day, and the other three were identified themselves as 'casual user' who checked the app much less frequently, or even, often enough, 'open the app only when I remembered' (Cao, an interviewee). Informed consent was obtained from all interviewees, and all of them were in a pseudonym.

According to Kvale and Brinkmann (2009, p.123), knowledge is created in the interview when the interviewer and interviewee are having a conversation about a theme of mutual interest, and a flexible interview guide allows a greater space in which the conversation about the gaming experience of the users can be carried on in a more ‘exciting and enriching’ way (ibid). An interview guide which contained core questions and topics (see Appendix 2) was prepared before the interview was conducted, however, rather than a question list, it performed as a framework around which the conversation of much flexibility was organized. For instance, the interviewees were informed in advance that they could refer to anything they thought to be relevant or interesting at any time during the interview, and the interview was, in most cases, carried on by a followed-up question which was formulated based on the previous answer and this indeed created a ‘chess play’ (ibid, p.139) between the two parties in the interview rather than restricting the conversation by explicit rules.

3.3. Data and methodology

The audio-recorded interview conversation was reorganized in a written form through verbatim transcribing (ibid. p.177, p. 180) and the transcribing was based on verbal sentences that non-verbal elements such as pause, emphasis and tones were not registered, and this process was facilitated by the audio transcription tool of MAXQDA. Apart from high efficiency, the ‘Time Stamps’ function of this digital allowed to create connections between the text and the coding location within the audio file, which made it much easier to replay a particular paragraph and navigate within transcripts.

After that, the transcript was thematically coded in MAXQDA according to steps suggested by Bryman (2012, p.576-577) based on intensive reading, with the aim of producing an index of labelled terms which helped the author to find patterns, and to

interpret and theorise the data. In MAXQDA, codes were organized in a hierarchical structure which consisted of main codes and sub-codes (e.g. behavioral change and behavioral change: consuming) and each of them were highlighted in different color, and in the later stage, the coded text was visualized in a code matrix which indicated the frequency of each code found in each specific document, which was used by the author as a reference when examined the internal relationships of the data. During this process, the coded transcripts were intensively reread for forging links between the data groups (i.e. thematic codes) and the research questions, previous literature and relevant theoretical framework (ibid, p.13). Based on the conceptual framework generated in the previous chapter, the major themes of power relation, knowledge gap and behavioural change underpinned the broad structure of the analysis process.

Based on the nature of the knowledge produced in this study, there were some epistemological and methodological issues about the data collection and data analysis needed to be clarified. Kvale and Brinkmann (2009, p. 48) proposed two metaphors to describe the role of interviewers and the different epistemological presumptions of qualitative interviews. The first one was 'interviewer as a miner', which indicated that knowledge of the subject was like buried metal - objective facts or real subjective meanings, and thus needed to be extracted by the interviewer through the process of 'knowledge collection' (ibid). Whereas, the second metaphor of 'interviewer as a traveler' took a very different standpoint to approach the nature of the interview, which suggested that the process of interview was like travel and by having conversation with subjects, the interviewer could explore the field together with the interviewees through the process of knowledge construction (ibid). As introduced in previous sections, the interviews in this research were carried out in a conversation-like form, which meant that the knowledge about the users' gaming experience was constructed by both interviewees and the author through their communications.

3.4. Reflections, ethical issues and limitation

According to Holliday (2007, p. 137), qualitative research is social action in nature. Thus, the presence and influence of the researcher in the research setting need to be acknowledged and analysed to communicate the validity of the research project. In this section, the author reflected her role in the research from several interweaving perspectives , and also presented a discussion about ethical issues.

3.4.1. An inside outsider

Regarding the relation of the author with the research setting, it is important to reflect on two aspects which indicate how the author was seen and tagged by the counterparties. Firstly, the fact that the author is a Chinese who was studying in at Swedish university brought about complications in the field. As a Chinese, the author could draw on the benefit of an ‘insider’ such as existing social network and language skill to approach to Ant Forest users quite easily. And drawing on the knowledge of Chinese culture and custom, the ‘researcher culture’ and the ‘research setting culture’, as referred by Holliday (2007, p.140) were, at a large degree, overlapped, resulting in less probabilities of issues often seen in ‘culture of dealing’ (ibid.), such as projecting and othering. However, the non-Chinese element of the author’s identity that she was a master student in a foreign university certainly pushed her to the opposite side of an ‘insider’. For example, in many cases, the people encountered in the field tended to be skeptical (or curious) about the motivations of the author to conduct this research, and they performed in a way which was different from how they behave in daily life, such as to be highly cautious about the wording in the conversation with the author, trying to create a conversation of both politeness and distance. To deal with this atmosphere of distrust, the author tried to give a brief description of the project, including aims and process. However, the general atmosphere of distrust towards the outsider in Chinese culture inevitably pose influence on the way how the respondents perceive

the research and role of themselves in the research, and hence posed influence on their performance during the interviews.

Secondly and similarly, the role of the author as both a game player and a researcher also influenced the attitude of the interviewees in two different ways. On the one hand, the fact that the author herself was a participant of Ant Forest allowed her to open up the conversation with interviewees in an easy and natural way by sharing her gaming experience with the respondents. Ant Forest was an affiliated app of Alipay and therefore is linked to digital wallet and consumption records, and these were regarded as highly private information in China. By sharing her own gaming experience and gaming habits of Ant Forest, the author could, to a great scale, let the interviewees relax their psychological defence and create mutual dialogue since they thought the author was one of 'us'.

On the other hand, the role of a researcher in the project hindered the author from being seen as a real game-player by the participants. The author was asked, often enough, to share tips about how to outperform in the game since she was seen as a researcher - an expert who supposed to be well knowledgeable on every aspect about the Ant Forest app. The misperception that the author was more well-informed on the game indeed prevented the author to be seen as a true 'insider' of the group of players, and this might further influence the effort of the author to sharing gaming experience and constructing knowledge during the conversation along with the interviewees.

3.4.2. The friend of a friend

As introduced earlier in this section, the snowballing sampling technique was applied in this research, that sampled participant further proposed other participants who fit in the relevant sampling criteria (Bryman, 2012, p.424). More specifically, during the interviewee recruitment phase, the second participant was selected from the friend-list

of Ant Forest app and introduced to the author by the previous participant. What needs to be clarified here was that in the Chinese context, snowballing sampling might act as something more than merely a sampling technique due to the networking-like ‘informal social institution’ (Wang, 2000) of *guanxi* in Chinese society. Under this pervasive personal social network, it was a social and cultural tradition that do favours for friends to maintain the social network. For example, whenever the author asked the participant to propose another Ant Forest user from his or her friend list, the participant would contact the person and introduce the author to the new person as his or her friend, a part of the *guanxi* network. Then during the following interview, the author was provided with cooperation and assistance by the new interviewee for the purpose of maintaining the *guanxi* network with the previous interviewee. Therefore, in the snowballing sampling process, the author drew on the dynamic personal linkage between her interviewees to complete the participant recruitment, and, to some extent, offset the ‘outsider’ impression brought about by the non-Chinese element in her identity.

3.4.3. Capitalist green in red China?

This paper aims to examine a new type of the capitalist green initiative. It should be acknowledged that the word ‘capitalism’ tends to leave a negative impression, such as exploitative, unjust, to people in some places in the world. However, it is particularly the case in China. Although China has advanced its market-based economy in past decades, socialism was still the mainstream political ideology, and therefore, the conception of ‘capitalism’ was strongly associated with negative meaning, and this tendency was reflected in the interviewee process too. For example, the interviewees gave a highly negative evaluation to Alipay after they learned that the aim of this study is to examine something related to ‘capitalism’.

Interestingly, rather than rational thinking, this opinion was generated based on a

stereotyped impression. One of the participants in the pilot interviewee pointed out that Alipay and Ant Financial was ‘bullying’ people because of its capitalist nature, but he could not offer any idea about what capitalism is. Two of the pilot interviewees both gave the similar critical opinion about their users’ experience with Ant Financial after they were informed about the aim of this study. Thus, the author revised the description of the study, avoiding using the word of ‘capitalism’ to prevent delivering a prejudgment.

To comply with the ethical guideline, informed consent was obtained from all of interviewees, and all of the them were under the pseudonym and were promised that their recordings were not disseminated to others.

4. FINDINGS AND ANALYSIS

This chapter analyses the contradictory nature of Ant Forest reflected on its background story and game rules. For interviewees, their understandings of the game story of Ant Forest and gaming strategies adopted are diversified, leading to different perceptions of Ant Forest and varied behavioural patterns. Analysis of the two dimensions structures the basis of the discussion. The game story of Ant Forest has constructed a value-based and imagined a venue where the players synthesise their value with Ant Forest or, often enough, with Ant Financial or Alibaba. Then, the discussion about the game rules presents the choices of gaming strategies of the players, and describes how their consuming behaviours are changed in reacting to the rules. Moreover, the discussion extends to the contradiction between users’ environmentalist mentality and enhanced reliability on the services provided by Ant Financial.

4.1. The game world of Ant Forest

As a game, Ant Forest must possess a clearly defined game-world where the players

can control and explore (Aaseth , 2003, p.2) . In the Social Responsibility Report of Ant Financial (2016), Ant Forest is described as a worldly-recognized bottom-up approach which encourages people to lead a low-carbon life. In addition, Ant Forest has released several videos on the internet (ALIPAY, 2018), and by narrating stories of the gaming experience of several users, it highlights three themes: environmental harmony based planting trees and conducting green consumption, affectional bonds of family and friends based on interactive communication, and self-transcendence based on insistence in the game playing. Meanwhile, it also communicates the idea to all the users that their participation is highly valuable, and they can make a change to the world by participating. The background settings of Ant Forest are so appealing to people that it has obtained massive users in a short period of time. Besides, unlike other online digital gaming program, in Ant Forest, these background settings are connected directly to the real life of the users, which turns the playing a part of everyday life.

In the interviews, the participants illustrate how they perceive the game-world of Ant Forest, how they position themselves in the game-world, and how they project the imagined game-world on Ant Financial or even the Alibaba Group to further re-construct a broader story and link it to their real life.

4.1.1. Navigating the personal value in Ant Forest

The difference in perceptions of Ant Forest represents how the participants are navigating their value within the game settings in different ways. For all interviewees, Ant Forest is understood as a pro-environmental project. In talking about their motives to play the game, the term “good for nature” is mentioned by all interviewees:

Of course, it's environmentally-friendly. (Zhao, Beijing)

Ant Forest is good for nature, and I think we need to do something for

saving our environment. (Wu, Chongqing)

All of the ten interviewees make explicit statements that they have an environmental consciousness, but the level is not identical:

I think environmental is crucial to our lives; I always use organic products if it is possible. I don't want my existence to become a burden to the world. (Qian, Chongqing)

Yes, it's planting trees, very cool and good for environment [...] I personally don't have much chance to do something good for the environment [...], you know, I drive a car to commute and always travel, but if there's a chance, I would like to see what I can do for the environment (Sun, Beijing)

Although they have different levels of environmental awareness, they all think Ant Forest is an echo of their environmental value:

Ant Forest [...] protects our environment, it cares about the world and does good for the people. I'm glad that I have a chance to participate, though it's not difficult for me [...] I'm happy to do something for the environment. (Li, Beijing)

That's something so cool that I always want to do, try as much as I can to protect the environment. I'm concerned about the environment; we cut too many trees, the environment is far worse than it was. You can't see any fish in the river because the river was stuck with garbage [...] and now Ant Forest gives me the chance to save it. (Zhou, Chongqing)

For many participants, by playing the game, they find a way to put their pro-environmental mentality into action. Several interviewees express the importance of Ant Forest for it provides them with a valuable and easy way to approach their

environmentalist goals:

I think Ant Forest knows what I'm thinking, and it helps me to achieve what I always wish to do. And I know there are many people have the same idea, we want to plant trees and protect the environment, but there's seldom a person really take action. I think it is because the power of an individual is so small that can hardly change anything. Now Ant Forest changes our little wish into a big blueprint. (Qin, Chongqing)

Smog or sandstorm, that's my every-day choice, and it's not really up to me. I think it's enough, but I couldn't do anything. [...] Ant Forest enables me to plant trees in the desert by conducting green consumption. It's not difficult at all, and I make off-line payment, pay the utility bills with Alipay. [...] I feel it's very meaningful that it proves that I can do something for the environment. (Zhao, Beijing)

These interviewees are witnessing severe environmental degradation while seldom have a chance to make a change, so a lot of them express the feeling of frustration. For many of them, Ant Forest is not only a game, but also something makes them feel that they are empowered to make a difference via conducting green consumption.

What is interesting is that, besides environmentalism, Ant Forest is reinvested with some other meaning based on its communicative function by its participants, and several interviewees express reflexivity over this:

My dormitory roommates are co-planting a visual tree, and this is the second one. We name the tree as yaoqianshu (fortune tree) because we all want to make a big fortune. We haven't met each other since we've graduated, about three years, and we rarely make any phone call to each other or even chat online, but [...] we are actually keeping in touch through watering the tree together every day. (Zheng, Chongqing)

I've been stayed in Beijing since graduating from the university and from then on, I can only meet my parents once or twice a year [...] but we each have a tree on our Ant Forest app, and I always collect green energy points from their accounts before they find out, we are competing with each other about whose tree grows faster. Of course, sometimes we water each other's tree too [...] I know they care about me and I want them to know that I do the same. (Zhao, Beijing)

Many interviewees mention that the interactively communicational function of Ant Forest tightens personal connection either with friends or with family members. Ant Forest enables the users to interact with others in three ways: co-planting, watering others' trees (i.e. donating green energy point) and collecting green points from others' accounts. These interactive ways do not include a direct verbal dialogue, however it makes the users feel that they are 'making efforts towards the same goal and they are thinking of each other' (Wu, Chongqing).

Likewise, the feelings of making efforts towards a certain goal also greatly influence how users see their own role in Ant Forest:

I want to plant a Salix, and I need nineteen kilograms of "green energy point". [...] I take jogging every day for at least five kilometres after work, it is demanding. [...] but I've already had about seventeen kilograms, that's almost. (Wang, Beijing)

I set the alarm clock to 7 am and get up to collect green energy points [...] and actually it's my biggest motive to get up early. It's a simple game that I won't lose to it [...] I just don't want to lose to myself. (Qian, Chongqing)

Trees, as the prize of the game, are seen by the players as something valuable for the environment and compatible with their own value (i.e. pro-environmentalist mentality) and emotional needs (i.e. affectional connection with others). These positive elements

associated with the trees generate satisfaction for these players, and make them embrace the rule of Ant Forest, and meanwhile, acquire a strong sense of ‘empowerment’ (Shaw, Newholm and Dickinson, 2006; Woodruff, Hasbrouck and Augustin, 2008).

4.1.2. The Ant Forest in the game-world

When the game players navigate their own value in the game-world of Ant Forest during the game process, they also actively search for attributes of Ant Forest, and associate these positive features to the justification of their engagement of the game. For example, some interviewees have mentioned they are impressed by solar-powered digital jackstraws which are employed to take landscape photos of the forests in the desert and upload them online, for distant inspection by the users. This facility is seen as firm proof of creativity and high technology of Ant Forest (Zhao, Beijing; Qin, Chongqing).

Similarly, Ant Forest is also regarded as an internationally recognized program by some interviewees:

I watched the advertising; UN is a partner of Ant Forest, [...] other countries also will learn some experience from it, you know, it’s influential internationally (Wang, Beijing)

Partnership with the United Nations, significantly improved the image of Ant Forest. Authoritativeness along with the feature of “low barrier to access”, Ant Forest leaves the users an impression of both credibility and inclusiveness.

Moreover, Ant Forest is seen as a socially responsible project and its seemingly ‘non-for-profit’ characteristic further reinforces this image:

Planting millions of trees cost so much, and we don’t have to pay for it [...]

Alipay pays for it, I know it's a huge company and Jack Ma is rich, but I mean not all rich people do the same thing, and I think it's respectful. (Qin, Chongqing)

Ant Forest doesn't make any money from it and [...] it's very costly, Alipay is so great. (Sun, Beijing)

As illustrated earlier, when the participants find echoes to their environmental awareness and personal feelings about friendship, family bond and the sense of personal achievement in the game-world of Ant Forest, they actually, more or less, link these abstract elements with Ant Forest. In other words, they see Ant Forest as a value-based program which highlights ecological and social well-being. What needs to be noticed is that these favourable impressions, along with the positive comments about Ant Forest are found to be expanded to its closely related business entities, such as Ant Financial, Alipay, and Alibaba Group. Users, in many cases, mix Ant Forest with Alipay or Ant Financial given the complicated cooperate structure of Alibaba group, and the fact that Ant Forest itself, as a product of Ant Financial family, is embedded in the Alipay platform, and the whole project of Ant Forest is designed and launched by Ant Financial. The blurred boundaries of these entities make the users to generalise and link the characteristics of the Ant Forest and Ant Financial (and Alibaba) to each other.

On the one hand, Ant Financial and Alibaba are generally believed by interviewees as a company with much sense of social responsibility and environmental awareness because of the program of Ant Forest.

I wish I could work for Alibaba, it's awesome! The product manager of Ant Forest is fabulous, so is the company. And I think there're many smart people with strong sense of social responsibility in Alibaba, and we need them. (Li, Beijing)

Also, the characteristics of user-friendliness and inclusiveness are also emphasised by the interviewees.

It's very easy, almost no barriers [...] you know, even my parents can play it.

The products of Ant Financial are all easy to use, you can do almost everything with Alipay. (Cao, Beijing)

Besides, for most interviewees, this linkage of the positive features of Ant Forest to Ant Financial has enhanced their trust in Ant Financial, and this is well illustrated by their answers as to the issue of personal information safety in playing Ant Forest:

I'm not concerned about the information security, since it (Ant Forest) is non-profit, and I don't think Alipay would leak my personal information. The thing I only care about whether there's someone steal the green energy point from my account. (Li, Beijing)

On the other hand, the influence and reputability of Ant Financial and Alibaba, or even Jack Ma, also influence Ant Forest from least two perspectives. Firstly, it improves the credibility of Ant Forest. For an online gaming program with a prize of real trees located thousands of miles away, to gain credibility among the public is essential.

I don't check the real-time landscape photos very often, maybe just twice or three times so far, and that wasn't for making sure the authenticity of this program. It was just for curiosity and fun. [...] It's Alibaba, and it owns half of China, I think the trees I got from the game were planted in the real world. (Zhao, Beijing)

I've never doubted the authenticity of the Ant Forest. I trust Alipay and Jack Ma and I think there won't be a second Jack Ma. [...] I have been using

various financial services of Ant Financial, from consumer credit to loans for small businesses and [...] if he has cheated on Ant Forest, he wouldn't have achieved today's status and accomplishments. (Zheng, Chongqing)

Furthermore, the authoritativeness of Alibaba and Ant Financial also promotes the 'green consumption' idea of Ant Forest, as for the users, it enhanced the reliability of the sources from which the users obtain the environmental information and knowledge (Darnall, Ponting and Vazquez-Brust, 2012). For most users, the green behaviours defined in the rule of Ant Forest is accepted and undoubted.

The users of Ant Forest attach tags of environmentalism, reliability, social responsibilities to a broadened scope of Alibaba and Ant Financial, and by doing so, the users further position the business empire of Alibaba into the game settings of Ant Forest. For the users, the discussion is no longer about the game-world of the Ant Forest, instead, is about an Ant Forest (or Ant Financial and Alibaba) in the game-world – a constructed image of a mega-sized leading business group with much sense of social responsibility, environmental awareness, international version, high technology, inclusive nature, etc.

4.2 The game rules of Ant Forest

It is claimed by Ant Financial that the primary purpose of Ant Forest is to cultivate pro-environmental behaviours of users through gaming playing. As a game, Ant Forest is rule-based, and by defining the rules, it encourages the users to make "player effort" (Juul, 2003) to achieve a favourable outcome of the game. This section first briefly introduces some of the most common strategies adopted by users to accumulate green points, and then it addresses the implication of the behavioural change of users brought about by the rules.

4.2.1. Outperforming in the game: Game strategies of users

Ant Forest allows users to obtain green energy points from several different ways, and once these actions are taken, different amount of ‘green energy points’ will be produced in the form of ‘energy ball’ and can be collected after a certain period. There is a clear variance in the degree of understanding of the rules and choice of the game strategies.

According to the interviews, to walk, make offline-payment with Alipay and ‘steal from others’ accounts’ are the most common ways to obtain ‘green energy points’. And all of them have mentioned that for accumulating the green energy point they spend time jogging or walking. The number of steps recorded by phone would be synthesised to Alipay account, and further transferred into ‘green energy point’ which can be collected in the next morning.

I’m walking to school every day, so it rewards me a lot of points, and I get up early in the morning, which allows me to collect my points as well as others’ before they wake up. (Cao, Beijing)

It’s quite a distance between where I live to my office, so I always drive [...] my wife and I like to go jogging in the evening to earn the points, and we have saved the cost of the gym. (Zhou, Chongqing)

For users in Beijing, sharing bike is another popular choice, but some users also complain that they can only obtain ‘green energy points’ through hiring shared bikes of OFO – a sharing-bike company invested by Alibaba. The OFO bikes are generally complained about their heavyweight and unease of handling in comparison with sharing bikes of other brands:

I don’t use OFO bike very often [...] unless there aren’t other choices because it’s a little bit difficult to control. [...] I know using bikes of other companies won’t give me any green points, but that’s fine. (Wang, Beijing)

How to say, you know, I won't choose yellow bikes (OFO)⁷ if there're other bikes nearby, NEVER. (Wu, Chongqing)

Another common strategy applied by users is to make offline in-store payment with Alipay, and according to the rule of Ant Forest, every payment can generate five grams of 'green energy points'. Moreover, paying utility bill is also an efficient way for almost all users to gain points, for it generates a relatively large number of points with every single payment producing 262 grams of points.

Also, according to all interviewees, 'stealing from friends' account' is a very popular way to obtain points. Ant Forest will notify the user once there are green energy points ready to be collected from friends' account, and this is an efficient way to quickly obtain green points for many users:

I think 'stealing from others' has contributed the most points to me, and we collect points from others [...] now I have twelve trees, but I'm ranked 68th in my friend list [...] which contains more than 1,000 friends. We all collect points from others [...] so, you have to calculate the time and collect your points on time. What I do is to set the alarm, and I 'steal' from others right after I collect my own. Otherwise, I'll lose them definitely. (Qian, Chongqing)

Qian's case is special for he has a large number of contacts in his Alipay account because he uses Alipay account in his business. However, the strategy of collecting points from others' account is wildly adopted by all interviewees.

4.2.2 Increased dependence

One can see from above illustration about how the users react to the rule and adopt

⁷ All OFO bikes are painted yellow

strategies, and this part addresses the problem of how these game strategies lead to behavioural changes that increase the reliability of users on Ant Financial.

Ant Forest is a product of Ant Financial. Therefore, it is not surprising that almost all strategies to get points in the game, except for walking, are depended exclusively on the service of Ant Financial or Alibaba group. For example, buying movie tickets only through the Alibaba-owned online platform of Taopiaopiao can generate points, and similarly, the sharing bike provider of OFO is also invested by Alibaba.

One significant outcome of the enforcement of the game rules is that the alternative products of other providers are excluded and the users' dependence on Ant Financial, especially on Alipay, is enhanced. For example, there are two biggest online payment providers in Mainland China, the Wechat Payment and Alipay, and they are much overlapped on the mobile third-party payment service. Based on the feedback of the interviewees, playing Ant Forest, to some extent, has driven them giving up Wechat Payment and become more reliable on Alipay:

I always use digital wallet and I have got used to making payment by them for everything in my daily life. [...] although I have both apps on my phone, now I don't use Wechat Payment very often, you know, I have a real tree to plant in the forest. (Zhao, Beijing)

They are almost the same, I used to use both. Now I also use Wechat but only in a few occasions. [...] I will make payment on my phone anyway, but I can also generate green points on Alipay. (Cao, Beijing)

Although for some users, the preference on Alipay is due to the needs for some other financial service of Ant Financial, such as 'Ant Credit Pay', a consumer credit offered by Ant Financial, Ant Forest indirectly enhances their dependence on these services in

several different ways.

According to the rules of Ant Forest, there are different time intervals between the transactions/actions taken and the generation of 'green energy'. For jogging and walking, the number of steps is recorded by the phone and synthesised to Ant Forest account every day and transferred into green energy points on 7 am of the next day.

However, for the green energy points generated by other actions, the time of collecting is not fixed, but depended on when the action has been done. They are settled and available to be collected in several minutes to 24 hours after the action has been done. Moreover, the energy points are also available for friends to collect when they appear in Ant Forest. Thus, to avoid being 'stolen' by friends and collect more from others, to check the app as often as possible is essential to outperform others in the game.

I get used to checking my Alipay account much more often than before to accumulate the green energy points as quickly as possible, and ideally, within next month, I will have another tree in the desert. (Zhao, Beijing)

Every time the users open the app to check the energy points of the game, it contributes to the incremental adhesiveness of users. And the active engagement with the Alipay app increases the customer loyalty (Hollebeek, 2011).

Another fact often mentioned by interviewees is that they are highly dependent on other Ant Financial products, especially 'Ant Credit Pay' -- a consumer loan which can be accessed through Alipay app:

Besides account transfer, I like to do shopping by Credit Pay, it's convenient and meanwhile, I can increase my Zhima credit and this is super useful. You know that if you have a high score in Zhima, you can rent a camera, computer or even car without paying deposit. [...] on average, I spend 2,000 yuan every

month on Credit Pay. (Zheng, Chongqing)

Credit Pay is the main reason why I use Alipay rather than Wechat Payment, but Forest is the reason why I love it, by making payment through Alipay, I also can do good for the environment. (Cao, Beijing)

I use Credit Pay to do shopping online, it's so convenient, you know, it can be accessed by one click in the app. (Zhao, Beijing)

For many interviewees, Ant Forest is not the primary determinant for them to use Alipay and affiliate financial services, but by engaging with Ant Forest, they have formed a new understanding of Ant Financial and its affiliate products that they are socially responsible and reliable. Likewise, Ant Financial is a fintech company, it draws on the advantages of new technologies such as mobile internet and big data, to improve financial services (Schueffel, 2016). The interactive function of Ant Forest also enhances the communication between users and further increase their reliability on Alipay.

5. DISCUSSION AND CONCLUSION

Ant Forest is an environmental initiative launched by a fintech company. It is based on the market logic of competition and expansion, and it also contains high technological features which allows it to achieve more advantageous modes of customer acquisition, effective cost reduction and innovative application of big data (McKinsey&Company, 2018). It is also a typical programme based on the concept of green consumerism, of which the aim is to cultivate a green lifestyle of people and address the environmental problems.

However, the whole program is characterized by its contradictory nature like any other capitalist environmental initiative. And this part, based on the interview data, identifies three interweaved problems associated with Ant Forest, which highlight the

contradictions between its environmental goals and the influence in the real world.

5.1. Physical and knowledge gap created by Ant Forest

For the users of Ant Forest, every time when they make a transaction to accumulate green energy points, it is not likely for them to have a full appreciation about where in the world would be affected by their consumption.

I don't much care about it. If I do shopping online, I rarely ask the seller. I will check some information when I buy stuff, but it really depends on what I'm buying. For food, yes, I like them from certain places of production [...] If I buy a laptop, it doesn't concern me too much. (Zhao, Beijing)

What I know is that I'm going to have the fourth tree in Alxa. (Qian, Chongqing)

When talking about the impact on the environment, the tree is always emphasized as a positive outcome of their active engagement of Ant Forest, and the influence of consumption on environment is generally ignored, and this can be seen an obvious outcome of the metabolic rift. Metabolic rift refers to “a growing spatial, ecological and social separation of societies from the ecosystems that support them” (Scales, 2014, p. 478) and is resulted from the capitalist production pattern (ibid.). This rupture makes it extremely difficult for individuals to appreciate the exact impacts upon the environment of their economic practices such as production and consumption (Foster, 1999; Schneider and McMichael, 2010) and thus make the notion of green consumption a false illusion (Scales, 2012).

In the case of Ant Forest, by accumulating green energy points, users have chances to plant a tree in a remote area. According to the rule, with the exception of walking, when users make any action/transaction to accumulate green energy point, they are very much possible to actually engage in consumption which involves environmental

implications to different places in the world, such as the place where the ingredient comes from, the places of production and the places of waste landfill in the future. It is the physical distance between the consumers and the localities where the implications take place that makes the users ignore the real influence of their consumptive behaviour on the environment (Sacles, 2014). What is special in this case is that another location – the locations of forestation in Ant Forest scheme– are involved in the consumptive process when playing Ant Forest.

I plant trees in desert through Ant Forest [...] I accumulated points through offline-payment, every time I make payment with Alipay, my tree grows taller. [...] I think we still have a long way to go, if all people in the world come to join us, there'll be so many trees and no desert anymore. (Wu, Chongqing)

The tree-planting at remote localities is generally regarded as something positive to nature as a whole by the users. This forestation location tends to be remote from where the users are, and although they can check the landscape photo of the forest online, it does not provide more information about the degree at which the forestation is good for healing the environmental illness in that area, and this lack of preciseness is also ignored by the users. Therefore, the rifts between several places as well as the consumers created by Ant Forest have a new environmental implication that it makes the users overestimate the goodness brought by their engagement with Ant Forest while still ignore the impacts on the environment of their consumptive behaviours.

5.2. Expansion of business

Ant Forest is a seemingly non-for-profit green initiative which aims at addressing environmental degradation by promoting green consumption. However, since it is launched by a fintech enterprise in the capitalist economic system, it also reflects some basic market logic, such as competition and expansion. By making and

enforcing the game rules, Ant Forest actually restricts the choice of the participants to only the services provided by Ant Financial and its affiliated entities. For example, according to the interviewees, for accumulating the green energy points, they tend to choose Alipay to make mobile payment and engage less frequently with other similar service providers like Wechat Payment. Moreover, the by making rules of the game, Ant Forest makes the users to conduct certain action/transactions which are in favour of the business plan of the whole Alibaba group. Moreover, since Ant Forest requires the users to check the app very often to be outperforming in the game, users' active engagement with Alipay and Ant Financial become more frequent, and this results in higher customer loyalty (Hollebeek, 2011). And the increasing adoption of financial service of Ant Financial, especially the customer loans, further boosts the online shopping business of Alibaba. For surviving and expanding in the capitalist economic system, the seemingly pro-environmental rules of Ant Forest actually serve the needs for competition and expansion for the whole Alibaba group, and this inevitably has huge environmental implications. Firstly, boosted e-commerce business are pumped up by rising consumption which increases exploitation of natural resources and produces more wastes. Secondly, the e-commerce per se generates excessive packing waste which poses huge risks to human health and the ecology (Zhang, Chen and Shen, 2016).

5.3. Simplification of environmental crisis

Almost all the interviewees have the tendency to equate 'tree planting' or 'tree' itself to environmentalism and link them to the idea of 'environmental protection'.

I think I would not play the game if the reward of the game is not real a tree or is just a visualized one. It's too boring and hasn't got anything to do with environmental protection; I would otherwise do something meaningful. (Cao, Beijing)

If it doesn't plant trees, it's then just a marketing campaign [...] and when you have a tree in the desert which you can see from the satellite picture, you feel they are really taking action to protect the environment, and so feel you are engaged and satisfied. (Qin, Chongqing)

The tree has a special role in Ant Forest. Apart from being the game prize, it is depicted as an effective way to combat environment crises, and this idea is widely accepted by the users. According to the CSR Report of Ant Financial (2016), the aim of the Ant Forest program is to combat climate change and desertification. However, it neither provides detailed or scientific explanation about the features and fundamental causes of these issues, nor the optional methods to address these problems. For example, the desertification of Inner Mongolia is a comprehensive outcome of many factors, and over-grazing and mining and over-use of water in the upstream cities due to rapid urbanization all have contributed to the issue of desertification in this area (Feng et al., 2015). Therefore, planting trees may not be able to address the fundamental causes of desertification in this area. However, according to the interviewees, tree is regarded as an effective means to tackle the desertification in those remote Gobi.

According to Morris and Kirwan (2010), this simplification of environmental information is one of the main critiques on green consumption for it leads to a new type of alienation of nature. In this case, the tree of Ant Forest, as the prize and the main theme of the game, do not only represents the environment goodness but also transforms the consuming behaviours of users into an action which is thought to be good for nature since it can yield green energy points. The more frequently the users engage with the Alipay service, the more quickly they are able to have a real tree in the desert, a symbolic item which is depicted as an effective means to combat environmental crisis. Therefore, it is not likely that users would link their everyday

consumption to the phenomenon of desertification, but seriously believe their consumption with Alipay will do good for nature. From this sense, the ignorance of the real influence of their consumption also enhances the metabolic rift, which creates greater rapture between the consumers and the environment (Scales,2014).

These problems are not isolated. The concept of metabolic rift explains that Ant Forest, as a capitalist environmental initiative, cannot address the contradiction between its developmental logic of expansion and competition, and its environmental value. Moreover, the treadmill effect of production illustrates why it is urgent and necessary for Ant Financial to achieve a more advantageous position in the competition with rival companies by launching Ant Forest program. Additionally, the users are alienated further from the real environment by Ant Forest through simplifying the ecological crisis to an issue which can be addressed by tree-planting, and this also contributes to a greater rift between human and the environment. The concept of commodity fetishism illustrates how ‘green lifestyle’ and ‘green consumption’ are marketed and the customers are made to fetishise Ant Forest and link environmental value to its related business entities. The tree, as the symbolic item in the game, conceals the needs and effective ways for fundamentally addressing the environmental problems.

5.4. Conclusion

The conflict between environmental well-being and economic development is one of the most significant dilemmas of current China. Ant Forest, as a fintech green initiative, makes people believe that fintech-driven business innovations have the potential to offer an environmentally compatible way to both boost the economy while meets the needs of ecological sustainability.

This thesis is based on the theoretical guideline of three Marxian critical theories of

metabolic rift, treadmill of production and commodity fetishism (Scales, 2014), and the empirical data collected through semi-structured interviews. It critically examines the Ant Forest as a gaming process, from the perspective of users, to analyse the environmental value discoursed within the game settings, the influence of the game rules and the contradictory nature inherent in the game.

Ant Forest transmits an environmental value to the users, however it in fact creates gaps between perception and behaviour for its participants. The capitalist logic of expansion and competition has been fully reflected on the rules of Ant Forest. On one hand, through launching Ant Forest program, Ant Financial has accumulated a large number of users, and by enforcing the game rules, it further excludes other competitors and occupies a larger market cap. On the other hand, consumers loans have become more accessible with Ant Financial on the internet and mobile platforms than ever before, and this allows the mass consumption to continue unhindered (Montgomerie, 2007). Moreover, according to the interviewees, the consumer credits are mainly used to do online shopping with Taobao, the wastes of packaging materials are generally ignored by the consumers. It is clear that Ant Forest facilitates alienation of nature by its game rules, and it further leads to contradictions between the environmental goals and real influence posed upon the participants. Under the market-based economic system, Ant Forest is more like a symbol of an inconsistent commitment to future environment.

Due to the huge influence and rapid proliferation of Ant Forest in China, future studies of Ant Forest are necessary. Empirical studies about its impacts on the local environment and the livelihood of people in the forestation places will help to gain a more comprehensive understanding of this program. Moreover, Ant Forest is the initial phase of a personal carbon account system, thus to study it in combining with carbon trading will provide another interesting perspective to look at the Ant Forest.

Appendix A. Interview guides

Themes:

- a. Understanding of Ant Forest
- b. Gaming experience of Ant Forest
- c. Gaming strategies
- d. Behavioral changes and perceptual changes
- e. Engagement with Alipay/ Ant Financial

Questions:

A. Understanding of the game

Do you remember when did you first know Ant Forest? How did you know it?

Why did you start to play the game?

Do you think you play the game because you have environmental value?

If so, to what extent do you think Ant Forest reflect the environmental value?

What element of Ant Forest interests you the most?

What is the meaning of planting a tree as the prize of the game?

How do you think to plant a tree in desert by your own efforts?

Besides the environmental meaning, is there any other meaning of the reward of a tree to you?

Besides environmental consciousness, is there any other elements of Ant Forest in which you are interested?

B. Gaming experience

How often do you play with it?

How do you comply with the game rules of Ant Forest?

Do you think the winning the prize is the priority of your game play? And why?

Will you engage with your friends in the game? And how?

How much effort do you put into the game play?

C. Beyond the game

Did you use any services provided by Ant Financial prior to engagement of Ant Forest?

How do you think about the service and the Ant Financial company?

Is there any change in the perception of Ant Financial after you have played Ant Forest?

If it is, how do you understand Ant Financial now?

What changes have occurred to your engagement with Ant Financial?

Appendix B: Empirical data – Interviews

“Cao”, 2018. Beijing. 30 Mar. 2018

“Li”, 2018. Beijing, 19 Mar. 2018

“Qian”, 2018. Chongqing, 3 Mar. 2018

“Qin”, 2018. Chongqing. 10 Feb. 2018

“Wang”, 2018. Beijing. 20 Mar. 2018

“Wu”, 2018. Chongqing. 8 Feb. 2018

“Sun”, 2018. Beijing, 12 Mar. 2018

“Zhao”, 2018. Beijing, 3 Mar.2018

“Zheng”, 2018. Chongqing. 13 Feb. 2018

“Zhou”, 2018. Chongqing. 21 Feb.2018

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