

# **Data as currency: Consumer vs. marketer insights into the value of private data**

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## Attestation of authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

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## Ethical Approval

Ethics approval from the Auckland University of Technology Ethics Committee (AUTEC) was granted on 10<sup>th</sup> July 2018, for a period of three years until 10<sup>th</sup> July 2021. The AUTEC ethics application number is 18/273.

## Abstract

Data is one of the most powerful resources in the digital world. Marketers and businesses such as mobile application platforms could not provide their services without utilizing the consumer, geographic, and usage data they collect. On the other hand, consumers seem unwilling to give up using digital service through their smart phones or to trade-off the convenience gained when they agree to share their data with service providers. O'Brien (2010) mentions that both utilitarian motivations and hedonic motivations drive consumers to share their private data via platforms. If a user wants to gain service from platforms she/he should accept the privacy condition and terms. Although consumers worry about their private data exposure, they do not have much choices to accept privacy policy and protect their private data at the same time (Walker, 2016). Thus smart phone users are becoming the leading consumers in digital consumption. For instance, the rise of e-payment is extremely convenient for everyone to pay bills without a wallet (Poon, 2007). Although people experience a different extent of psychological pain of payment through a variety of payment methods, the least pain of payment might be from online payment (Yeung, 2014).

This thesis will focus on consumer versus marketer insights into the value of private data. Consumers' views of their own private data are hypothesized to influence their attitudes on money and might affect their willingness to purchase tangible (vs. intangible) products and services. Do consumers view their private data as a form of currency that grants them access to desired goods and services? Understanding this question is the reason the researcher is going to identify consumers' data consumption behaviour and explore their view of data as currency.

The researcher conducted a field study over 4 days to identify whether consumers are willing to use cash or data as currency to purchase tangible goods. In total, 147 participants purchased 8G flash drives and completed questionnaires. As a result, the main effect is that

127 participants (86.4 %) were willing to purchase the tangible good when data was used as currency to but only 20 (13.6 %) participants chose to purchase when cash was the currency. This finding indicates that consumers, at least of the university generation, have already well-accepted data as currency. Implications and limitations are also discussed.

## Chapter One: Introduction

### 1.1 Background

Swiping a QR card through a smartphone for the weekly groceries. Scanning a bank card from a smartwatch to buy a coffee. It can be insanely simple to complete a payment in one minute in the digital commercial world of 2019. As the payment methods change, consumers' attitude towards money might also fluctuate. In the past, money could be a physical item that is held and counted. But the young generation prefers to choose mobile payment rather than card or cash payment (Raghubir, 2017). Money has become more and more intangible. For many in the developed and developing world, money is now just a cluster of numbers in consumers' e-bank accounts. As the mode of payment became less touchable, consumers' experienced pain of payment are gradually released by updated technology (Rick, Cryder, & Loewenstein, 2008).

According to Mäntymäki and Salo (2014), web and mobile service providers like to utilize the free log-in to attract users to share their private data to those platforms. Walker (2016) mentioned that although consumers have had the privacy consciousness, they can not protect their private data well enough. Consumers suffer from privacy disclosure because they can not control what the platforms do with their data once it is collected (Weinberg et al., 2015). It is considered that consumers' private data could be seen as images, clicks, and digital behaviour. Based on different exchange valuation, this paper seeks to make several comparisons between money as currency and data as currency.

For marketers, data is extremely significant and creates business value and profit (Chao, Yang Li, Miklau, & Suciu, 2017). According to Yan, Zhang, and Vasilakos (2014), good trust management can win more clients. The more trust a consumer experiences with a service provider or product provider, the more the consumer is willing to exchange their data

and digital habits with the provider. Users tend to accept intangible goods as its service attribute (Vargo and Lusch, 2007). Thus to be a marketer, it is necessary to understand exchange theories.

There are also several differences between purchase of tangible goods and intangible products. Consumers can normally touch, taste, or look at tangible products. Levitt (1981) mentions that tangible goods providers have to make more credit guarantees to consumers to promote products. People experience intangible goods as services and digital products. According to Zeithaml (1981), intangible products are untouchable by consumers. For instance, Facebook is not a physical item, but it is an intangible service. It does not charge fees from individual users, but users accept privacy terms to share their private data to Facebook as an exchange condition.

In the real world, consumers use to exchange their private data to gain convenience from online platforms or intangible service providers, often through clicking ‘accept’ conditions and terms (Song, Shi, and Fischer, 2012). Consumers’ perceptions of the value of their private data is changed by technological improvement. Because of diverse motivations for private data sharing, consumers’ perception of their data as currency could vary if they are going to purchase tangible or intangible goods.

## **1.2 Research Objectives**

How do customers view their private data? Do customers view private data as something of value or something that can be exchanged as currency?

Before this research, past experiments focused on consumers’ motivations of private data sharing and consumers’ attitudes toward money and different payment pain. Few studies, however, researched consumers’ digital consumption behaviour under a variety of payment methods and tangible or intangible goods. To gain a deep consumer insight of the exchange

value of private data, this thesis will explore how consumers value their private data through purchasing tangible goods under different payment methods. After the researcher reviewed marketers insights and usages of private data, the effect of this experiment could also provide initial evident for marketers to understand the consumers' purchase behaviour about their private data. In one hand, it is valuable for marketers to advance their marketing strategies and update consumers' privacy and trust management in digital era. On the other hand, it could be beneficial for consumers because such a study could enlighten them to the value of their own data, so they might attach importance to their private data and elevate their privacy security concerns.

### **1.3 Research Questions**

**R1:** Are consumers willing to use private data to purchase intangible goods?

**R2:** Are consumers willing to use private data to purchase tangible goods?

**R3:** Do consumers who enter into an exchange using data as currency view the transaction as communal or exchange orientation?

The research objectives can be tested in the literature and via a field study in this thesis. The first research question might not be tested in this study because this situation is quite normal in the marketplace. However, I will explore answers to this question in the literature review chapter. The second question might help the researcher to identify the differences in consumers' behaviour and motivation toward their private data between cash as payment and data as currency condition. In relationship marketing, people holding an exchange orientation might tend to get benefit from relationships and services, while people holding a communal orientation might not care about the immediate rewards and profit (Clark & Waddell, 1985). This orientation could be key to consumer attitudes towards using their data in exchange for desired goods and services. The third question is intended to

explore consumers' communal or exchange orientation if they use data as currency to purchase tangible goods. Both consumer purchase behaviour and insights into their private data could be identified by this thesis.

#### **1.4 Methodology**

This thesis used a field study experiment conducted under two different condition settings: one is that the participants could only use cash as currency to purchase the tangible good (in this study, an 8G USB flash drive); the other is that the respondents could only use data as currency to buy the same tangible good. 147 participants successfully made a purchase and completed the questionnaires. The researcher recorded the questionnaires as these were under different conditions. When the consumers purchased the tangible products via cash as currency, they were asked to complete the questionnaires. For data as currency condition, if the consumers want to purchase the tangible goods, they should post one picture from their own smart phone and then hashtag #AUTMKT onto social media platforms, and complete the one-page questionnaire. This field study lasted four days. Each condition conducted in turns and equally lasted two days.

#### **1.5 Structure of the thesis**

There are six chapters of this study. The first chapter is the introduction of the research and indicates its importance for study. A literature review will be detailed in chapter two, mainly discussing money attitudes, the rise and use of data, and related consumer theories. To illuminate the research idea, chapter three will introduce the research design and methodology. After conducting the field study, chapter four will discuss the main effects and findings of this research. Following, chapter five discusses the connection between research questions and data analysis. These are several implications, limitations and direction for further study showed in chapter six.

## Chapter Two: Literature Review

People have used smartphones and interconnected electronic personal devices as a daily necessity in the past decade. Data is the leading actor of the digital stage which has spurred recent innovations in human life (Mayer-Schonberger & Cukier, 2013). As the technology has grown, internet companies and users rely on each other more than ever. Misusing private data by business entities, however, has lead consumers to have concerns about security problems (Kshetri, 2014). Although internet users are already aware that their private data could be divulged or stolen, they do not hold enough agency in general to reject permission to provide private data, as private data is used in exchange for key services from such institutions (Walker, 2016). The new types of service have also changed consumers' perceptions of money or exchange value. According to Yeung (2014), payment can result in psychological pain for consumers. Though, different forms of payment can alter pain of payment. For example, credit cards bring consumers less pain than using cash. And, online payment procedures have further released consumers from experiencing the pain of payment through well designed, more seamless interfaces that put people farther away from tangibly touching and counting out money.

This thesis seeks to dig deeply into consumer insights of money and data versus marketer insight of the value of private data. Consumers' perceptions of their private data are important to explore, as it may change their attitudes toward money and influence consumers' willingness to purchase tangible goods. But as the technology shifts for consumers, this thesis argues there is an urgent need for consumer behaviour researchers to identify consumers' intention to exchange data for digital services, and explore data as the new pattern of currency.

It is suggested that consumer purchase behaviour in the new digital landscape tends to exchange private data to gain intangible products. This involves a new category of exchange currency that has emerged in the consumer marketplace, that of private data as a currency of exchange. This chapter will discuss consumers' willingness to purchase tangible goods when they use money as currency versus data as currency.

## **2.1 Money as currency: Consumer insights into money**

### **2.1.1 Money attitudes, perceptions, illusions**

Money was created as a tool to facilitate transactions in the marketplace (Mitchell & Mickel, 1999). Money has diverse properties and meanings from multidisciplinary points of view. From economics, the main function of money is achieving exchange action. As Kiyotaki and Wright (1989) mention, money plays a role as a medium to facilitate exchange activities. For social science, according to Carruthers and Espeland (1998), money symbolizes a measurement of social influence, diverse commercial dealings and boosted value exchanges. For instance, consumers believe that having and owning money is equal to fulfilling their needs from the world (Zhou, Vohs, & Baumeister, 2009). In psychologists' eyes, individuals have different, subjective perceptions of money. Money should not be limited in mindset but the meaning for it relies on people's usages in specific settings (Carruthers & Espeland, 1998). For example, money could be earned, be held, be saved or be spent by people, though it is rare for most consumers to be concerned about the nature of money beyond its utilitarian applications (Lietaer, 2001). Different consumers have varying degrees of money demand (Mitchell & Mickel, 1999).

Money presents first in consumers' mindsets as a physical item. Traditional forms of money are tangible objects such as metal (i.e., a gold bar, coins), paper (i.e., cash or cheque), and credit and/or debit card (i.e., a Mastercard or a Visa) (Mises, 1971; Lietaer, 2001). But in

the modern era, money can essentially exist as just a string of numbers in consumers' electronic bank accounts. And as advances in technology continue, perhaps via face recognition technology, money might evolve into entirely new and as-yet-unknown forms in the future. In addition, money has a symbolic and spiritual meaning. From consumers' points of view, simply having money in their possession gave them significant satisfaction and psychological support (Mitchell & Mickel, 1999).

Money is, above all, a fungible resource and its forms are highly interchangeable for purposes of trade. According to Hirschman (1979), people experienced a fractional process to determine which forms of money could be used when they purchase, for instance, selecting between coins and papers, or swapping out credit cards rather than writing a cheque. Spending money through credit card feels less tangible than using cash (Roberts & Jones, 2001). If the procedure of spending money is on a stage setting, the credit card mechanism seems a backstage worker which evades consumers' eyes and moves the money in the dark, whereas cash is like an actor in the middle of the main stage. Cash thus has higher visibility and tangibility. Credit card use provides consumers convenience but also brings negative effects. For instance, consumers who select credit cards to make a purchase show more excessive consumption than when purchasing with cash (Leon et al., 2012). Fewer and fewer opportunities for cash usage might make consumers forget or neglect their physical wallets. Younger consumers are also increasingly more likely to prefer to use mobile applications for achieving payment through peer-to-peer platforms (Raghubir, 2017). Thus, money presents a trend of becoming gradually more and more untouchable and less physical and present in the digital world.

Money is experienced in vastly different ways within diverse consumers' views and psychological settings (Wernimont & Fitzpatrick, 1972). People's attitudes toward money are highly related to consumption culture. For example, for consumers who seek to impress their

social status through spending money, they consider money as a symbol of authority (Roberts & Jones, 2001). For instance, business men purchase luxury cars and \$10,000 watches to show their success. According to Roberts and Jones (2001), consumers who were sensitive to price were less likely to be credit card users. In Asian culture, wives prefer to save money for psychological and life security (Lunt, 1994). The behaviour of using money could be an intensely personal issue. According to Vohs, Mead, and Goode (2006), people prefer to be independent and show less desire to give help while they were reminded of the concept of money. Hansen, Kutzner, and Wanke (2013) found that consumers' mindset could be influenced by reminding them of money as a simple cue, which may lead their psychological changes and decision making.

Although consumers can gain satisfaction from purchasing goods, they might experience a pain of payment when they are spending money. Rick, Cryder, and Loewenstein (2008) explained two sorts of extreme consumers: one was prudent about spending money because of their high degree about pain of payment, the other was on the opposite side and experienced very little pain of payment. When consumers were prompted about the notion of opportunity cost, however, in which pleasure enjoyed by a purchase is foregone when one chooses not to buy, some tend to change their mind and in turn to spend more money (Rick, Cryder, & Loewenstein, 2008).

### **2.1.2 Mode of payment and pain**

Consumers might prefer to unconstrainedly choose different modes of payment to achieve their purchase. Consumers' perceptions are various toward distinct modes of payment. Long ago, bags for heavy metal coins were replaced with wallets to carry folding paper-medium money. Cash is a sort of tangible paper money. For instance, Kamleitner and Erki (2013) explored whether consumers who chose cash payment to obtain goods have

stronger feelings of psychological ownership and attachment versus when paying by card, due in part to perceptions of more investment with a purchased object. The researchers found that consumers who pay via cash report higher immediate feelings of psychological ownership than those who pay by card (Kamleitner & Erki, 2013). To compare with credit cards, Chatterjee and Rose (2012) verified that consumers took cost into account rather than thought about the benefit of a product/service when they were using cash as the payment method.

Credit cards seem more intangible than cash. The giving action is not monitored by consumers, as a payment on a card is swiped through a point of sale (or POS) machine versus counted out physically by consumers paying at the counter. According to Prelec and Simester (2001), people were encouraged to swipe credit cards to pay their expenditure rather than using cash from as early as the 1970s. For example, consumers tend to be willing to pay more, are more open to higher prices, and are more likely to tip more when credit cues are shown, such as the credit card symbol on the folder used to present restaurant bills (McCall, Trombetta, & Gipe, 2004). That means even when consumers paid in cash, the mere presence of a credit card symbol prompted higher tips (Fiengberg, 1986; McCall et al, 2004). The credit card cues function to drive more tipping and willingness to pay higher prices because they felt a sense of high perceived self-value (McCall et al, 2004). However, the credit card effect has dual character. Lie, Hunt, Peters, Velu, and Harper (2010) demonstrate that year-one university students in New Zealand consider credit card presence as a limitation for spending. The customer perception of debit card usage has emerged as being quite approximate to credit card with comparing with cash. For self-control reasons, consumers presented a positive aspiration to consume more when their debit cards had the same logo on it as credit card (Moore & Taylor, 2011).

In today's digital world, consumers are increasingly showing a preference for using an electronic wallet through smart phones to finish this payment procedure, rather than bringing a physical card to a merchant's shop. E-banking is a more sensitive and more highly efficient service for consumers. For example, people can use e-banking service wherever and whenever possible without bringing a physical wallet (Poon, 2007). Nowadays, bank customers do not need to go to bank counters to fill in forms for transferring money or to pay bills. It is quite convenient to handle such business by signing into a consumer's personal bank account through a mobile application and moving money symbolically via bank transfer. In this case, consumers might be more cautious to select platforms. If the e-banking application is developed by a big bank that is well known and reputable, consumers could have more confidence and trust to experience such service. But it is also possible that digital formats can induce people to consume more than they imagine (Yeung, 2014). Marketers did not ignore this phenomenon. Retailers optimized the payment procedure to release consumers' pain such as 'Amazon's patented One-Click checkout' for credit payment (Rick, Cryder, & Loewenstein, 2008).

The virtual world has also generated new forms of currency and payment systems, from bitcoin to peer-to-peer payment and lending services fueled by digital device access. The bitcoin is a controversial notion that emerged in the past 10 years. Bitcoin is a sort of self-regulating digital currency which can be used to exchange gold and goods, and which was born and created online without any governmental authority (Grinberg, 2011). As a new peer-to-peer payment system, bitcoin did not provide sufficient privacy protection for consumers (Androulaki, Roeschlin, Scherer, Capkun, & Karame, 2013). However, consumers might tend to view digital currency as an investment method while they did not want to change the current payment mechanism (Glaser, Zimmermann, Haferkorn, & Weber, 2014).

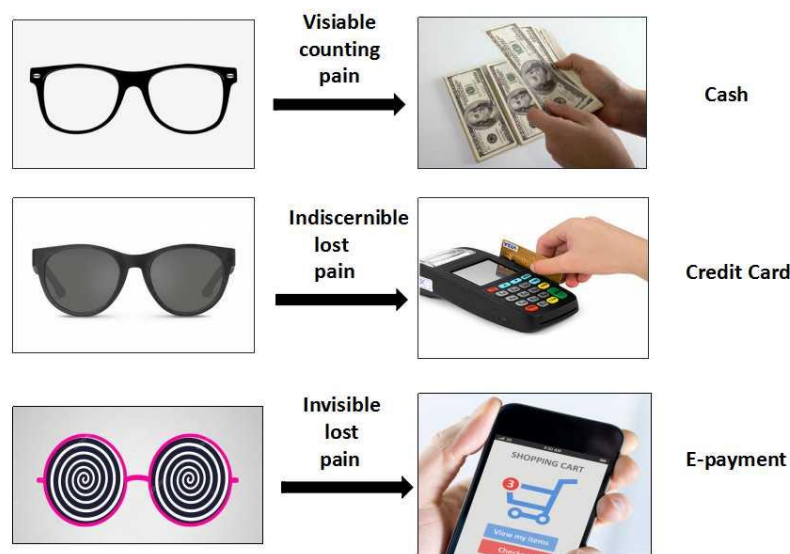
The act of spending tends to activate, in general, a pain of paying that can deter spending in varied modes of payment. The act of physically holding and counting out bills and coins could reduce consumers' spending behaviour when they use cash as payment method. This is the reason why credit card payment, which removes the need to consider the precise amount via counting and to contemplate the sum remaining leftover in a paper-money wallet, might relieve consumers' pain of payment pressure (Yeung, 2014). Consumers prefer to use mobile payment than cash (Falk, Kunz, Schepers, & Mrozek, 2016). When consumers buy a pricey, high dollar luxury good, for instance, they would refuse to bring a large bag of cash to count. Online payment options relieves consumers' pain of payment and provides a series of convenient service for shopping. For example, Chinese website 'JD.com' provides a service in which consumers could get their delivery on the same day if they chose the warehouse from the city they live in.

To sum up, the most tangible payment format, cash, results in the highest pain for consumer payment. Cash normally is manifested by paper or coin, which creates visible counting pain. According to Kamleitner and Erki (2013), cash payment yields an increased sense of psychological ownership. Credit cards created a lighter experience of pain of payment, but still higher than electronic payment mode. Using credit cards seems more intangible than spending cash (Roberts & Jones, 2001). Paying through credit cards could lead to indiscernible lost pain but might not yield the same visible counting pain as cash. According to Poon (2007), the reason why consumers accept e-banking service were related to considering convenience, approachability, and user-friendly content. User-friendly content might reduce consumers' pain of payment more than traditional payment methods (Yeung, 2014). Compared with cash, people already tend to choose and prefer mobile payment options (Falk, Kunz, Schepers, & Mrozek, 2016). Consumers might spend more money because the intangible payment process was easier to be controlled by influential platforms

(Yeung, 2014). The most intangible form of payment is online or mobile transaction through e-banking business now, which might further remove the sense of immediate psychological ownership. It means that e-payment result in a less visible pain of payment. E-commerce options are thus designed to further reduce the pain of payment consumers experience to encourage them to spend more, an important facet of internet shopping as it booms all over the world. Table 1 and Figure 1, below, help summarize and illustrate the perceptions and experiences of consumers towards different currency and payment formats.

	<b>Cash</b>	<b>Card</b>	<b>E-payment</b>
<b>Over-spend situation</b>	Cash payment might increase unplanned or unhealthy food consumption (Kamleitner & Erki, 2013)	Consumers tended to over spend money when they brought on credit card vs. cash (Leon et al., 2012).	Consumers would spend more money if the interface was well designed (Yeung, 2014).
<b>Situation for pain of payment</b>	Consumers who use cash as payment might have a sense of ownership (Kamleitner & Erki, 2013)	Credit card spending procedure seems more intangible than cash payment (Roberts & Jones, 2001).	Consumers consider privacy or security a problem when they use an online service (Weinberg et al., 2015).

**Table-1: Mode of payment and pain**



**Figure-1: Mode of payment and pain**

## **2.2 Data as currency: Consumer insights into data**

### **2.2.1 Big data versus private data**

Data-driven marketing is becoming a prevalent trend in the contemporary digital era. Big data can be defined as all data resources such as online content, user profiles, and trading records which are from every industry, for instance, internet, healthcare or finance (George, Haas, & Pentland, 2014). Big data is known for its overwhelming size, volume and instantaneity (Erevelles et al., 2016). But today, consumers have no more clear wonder and excitement about big data when they hear news such as that Google could handle over ‘24 petabytes of data per day’, as technology changes so rapidly, such milestones are reached on an almost daily basis (Mayer-Schonberger & Cukier, 2013). Besides the petabytes, exabytes and even zetabytes have arisen for big data calculation (Erevelles et al., 2016).

Technology helps business to collect and analyze consumer data from every angle. Every consumer who shares information comprises the commercial treasure trove of

consumer big data. If a firm wants to understand its consumers, customer analysis is a highly effective, though still under-explored method. Big data technology gives companies a great chance to learn from their customers, which impacts a firms' marketing strategy. Gandomi and Haider (2015) mention that big data analysis can be classified into text, audio, video, social media, and predictive analyses. Institutions utilize the data for a better understanding of their consumers' behaviour and to enhance companies' competitive power (Seref Sagiroglu & Sinanc, 2013).

Consumers benefit from big data, too. For example, people could gain knowledge from Wikipedia or Google, just by entering several key words online, at no monetary charge. Almost all social media and electronic shops do not charge fees from users for basic services. Consumers not only enjoy convenience from digital platforms, but also became the information sources of these organizations. Walker (2016) mentions that consumers began to freely exchange their information to get convenient online service. In the online shopping setting, people tended to purchase in real time for three sets of advantages: (1) shopping at home without encountering bad weather and saving journey, to- and -from expenses, (2) online payment brings less pain of payment and higher efficiency rather than using cash or cards; and (3) the ordered goods will be delivered by logistics companies direct to consumers' home through a relatively low cost service.

From a customer perspective, the sorts of customer-related data they exchange in return for such e-commerce and social media platform benefits can include their private data, from brand preferences and favourite films and celebrities to personal conversations, shopping history, personal photos and personal details. Private data can be classified as text, image, video, audio, clicks, page visits, or other cookie-related types of information (Weinberg et al., 2015). Some customers seem to recognize that digital content is private data which could be seen as a currency, but it can be difficult to distinguish because the majority

of data is collected in a passive way (Weinberg et al., 2015). For example, consumers might consider text as private data but ignore the clicks and search history cookies captured in their web browsers, which are also relevant data in big data analysis. Consumers also tend to exchange their private data to gain service, but take little to no time to read the whole contents about the terms and conditions (Walker, 2016).

### **2.2.2 Modes of data exchange and pain**

Data is a sort of intangible monetary resource, especially when it is presented as currency (Levitin & Redman, 1998). Consumers gain convenience from digital service through exchanging their private information (Poon, 2007). Although private data is sensitive, consumers still share personal information in exchange for service, such as social media and mobile applications.

Consumers gain all-round information from the internet. Consumers gain nearly limitless benefits through modern internet-of-things-based technology, for example, questions answered, weather prediction, daily news, website access, and maps with real-time geo-located directions. Micro blogs emerged as a great place to read consumers' opinions (Chamlertwat et al., 2012). There are many products for specific usage such as Google Scholar for academic practitioners, Google Map for commuters. However, Walker (2016) reports that sharing data is the most common mode of data exchange pathway. Social networking is a significant tool for consumers to connect with friends and family and colleagues, which also allows users to exchange their private data on social media platforms. Communication is a traditional but everlasting need for every human. Social media presents a tool for users' daily interaction and provides consumers with a perception of affiliation (Kim & Drumwright, 2016). Some people might use social media to chat with friends in real-time, and others might interchange their work needs through this sort of platform. Importantly, to

begin using social media, all consumers agree with terms and conditions that include private data exchange conditions.

Facebook, with more than 1.2 billion active monthly users, provides a public area for consumers to interact with peers or even with brands. Kim and Drumwright (2016) found that sharing brand-related preference opinion helped build up consumers' sense of belonging. Further, if a consumer is highly involved in a brand activity on social media, they might be motivated by a self-expression desire (de Vries et al., 2017). Romantic motivation was an important factor highly related to online aggression through social media usage (Young, Len-Ríos, & Young, 2017). To contrast with normal consumers, web-celebrities and social influencers might be more inclined to show their private information such as selfie photographs and lifestyle records through social media to gain more attention for self-promotion purposes. However, not all consumers hold positive attitudes toward social media usage. Employees, for instance, have less confidence to use social media presenting business due to their indifferent motivation (Hansen & Levin, 2016). Aiming for networking, consumers built different relationships with others through exchanging private data to peers or to social media platforms.

For fun, according to Viswanath, James, and Xin (2012), consumers hold a more recreational motivation to increase their use of information technology in modern consumption culture. For example, young people play electronic games with their smart phones and even gather three or more friends digitally to form a team against their competition. Xu, Ma, and See-To (2010) mention that consumers' behaviour of watching videos such as movies and sports games through mobile applications was also motivated by hedonic or pleasure-seeking and enjoyment reasons. But these consumers might not be sensitive about how the process of selecting their preference of program type is equal to a procedure of exchanging users' private data.

Improving work efficiency through convenient digital services is another salient need from consumers answered by modern digital platforms. For example, in online shopping, consumers save time and monetary costs. Instead of going to physical stores, they can shop from home if only they provide their private information to suppliers such as home address, mobile phone number, purchase preferences, digital payment method, and preferred delivery time options. According to Jayawardhena (2004), consumers' values about self-judgments and self-achievement result in their active attitudes towards exchanging their data and details for convenience and provide strong support to meet their purchase demands.

### **Pain of Private Data Disclosure**

When consumers install applications on their smartphones or electronic devices, or accept the terms of user membership for a software, website or service, they often click “agree” to a series of user agreements, terms of service and privacy disclosures. These disclosures can involve sharing their private data to the platform, data such as location information, phone contacts, friends on Facebook or Wechat, and photo albums (Berreby, 2017; Electronic Frontier Foundation, 2009). To use social media, most consumers freely post photos, share details about what brands and celebrities they like, and privately message friends and family through messaging systems enabled by commercial social media services. The physical world can also be part of the data gathering. Consumers might overlook that driving through a traffic light or a toll both could be captured by camera, or walking past a store with cameras mounted outside. Each consumer thus becomes a contributor to big data.

In the analog era, prior to the penetration of wireless and more widely available internet and the widespread adoption of mobile devices, it was more rare for consumers to share personal information actively. Today, Walker (2016) shows that consumers exchange private data with countless third-party platforms as part of their daily routines. Lack of

discriminability for choosing trustworthy applications can place digital users into an unprotected and even unsafe condition (Walker, 2016).

However, private data might be exposed to platforms under tracking techniques without consumer initiative controls (Weinberg et al., 2015). For example, Mi Band from China could monitor a user's running records such as road map, total distance, heart rate, and create a ranking list among users' networks. A Google mobile user does not share any photos to public, however Google can access the whole album from back-up database servers. This means that whether web users post information online or not, their private data faces exposure risks.

### **2.2.3 Struggling among Convenience vs. Privacy & Security Concerns**

Research has shown how prevalent the conflict between convenience and privacy is for consumers. Weinberg et al. (2015) reveal that consumers might balance the importance of privacy versus convenience when they decide to choose an online service. According to Song, Shi, and Fischer (2012), consumers in digital marketplaces are surprisingly willing to exchange convenience from service suppliers for utilizing their data, even though they could chose to manage their private data. However, consumers might not have plentiful options to gain needed information and service and reserve their privacy at the same time (Walker, 2016). For instance, drivers who chose to protect their privacy and restrict the sharing of their location information cannot effectively use Google Maps service on their smartphones, since the map service depends on live, real-time geo-coded information to provide its directions.

Consumers do show concerns about their privacy and security while they are using e-services. Graeff and Harmon (2002) show that consumers are concerned about how marketers use their data, which is highly connected with their purchasing behaviour in the emerging e-commerce setting. Chamlerwat, Bhattarakosol, Rungkasiri and Haruechaiyasak (2012)

demonstrate that users share viewpoints such as predilection about a product, feelings following a service experience and interest about a brand through social media platforms. Yet Kshetri (2014) found that consumers have already realized that their personal data might be improperly utilized in commercial settings. Consumers further identified more awareness of security issues about their mobile devices and applications in their devices (Chin, Felt, Sekary, and Wagner, 2012). Though experts develop technical solutions for preventing identity theft, consumers have a lack of professional knowledge and might not recognize the hidden trouble they would meet (Ghazizadeh et al., 2012).

However, consumers continue to post individual, private data and information through social media channels, and are increasingly using social media as the gateway to online, digital services from maps to banking, translation and instant messaging. As Prince's (2018) experiment shows, if users have more chance to control their private data from platform empowerment, they would share more data. Although consumers note concerns about privacy and security issues, they sometimes appear uninterested in stopping their use of using third-party platforms for social networking purposes.

#### **2.2.4 Trust**

Consumers' trust mixes many notions in terms of reliance, credibility, and believability related to privacy protection and safety under the 'Internet of Things' context (Yan, Zhang, & Vasilakos, 2014). Kim and Peterson (2017) demonstrate that online trust is derived from consumers' sense of privacy or prognosis of service, and refer to their future behaviour such as the frequency of repetitive purchase or use. Trust motivates consumers to use digital services via exchanging their private information. For example, consumers considered that trust and security are important to them while using cloud computing services (Ghazizadeh, Manan, Zamani, & Pashang, 2012). Furthermore, trust could determine whether

a consumer actively posts their private data online or not, but it depends on different personalities of users or their perception of privacy (Bansal, Zahedi, & Gefen, 2016).

On the other side, if consumers lose trust for an online platform, they might not use the digital service or application again. This means that an untrusted corporation might miss an important information source. To highly data-source-related platforms, user loss hinders their regular business development or even weakens their core competitiveness (Bozic, 2017).

Table 2 below explores the implications of data as information of value that consumers and marketers alike exchange in return for access to desired goods and services.

	<b>Money as currency</b>	<b>Data as currency</b>
<b>Forms</b>	Coins, bills, credit cards, debit cards, e-banking, bank transfer, digital wallet	Text, images, videos, audio files, clicks, page visits, or other cookie-related types of information
<b>Used most often in exchange for</b>	Tangible products and intangible service and experiences	Intangible services and experiences
<b>Earned from</b>	Employment or via selling goods and services	Generated from usage of smartphone devices, web browsers, online shopping carts, check in and sharing information from photos and videos to locations and brand preferences on social media and via user agreements
<b>Exchange valuation</b>	A \$5 application available on app store provides advertisement-free usage of an app	A “free” application available on an app store provides services but tracks user data, includes advertisements and interruptions

**Table-2: Money as currency Versus Data as currency**

### **2.2.5 Consumer motivation on private data sharing**

Consumers share their private data with their friends and the public for two main motivations: utilitarian and hedonic motivations (O'Brien, 2010). Berreby (2017) mentioned that the platforms recorded consumers' shared data and content as varied as photos, mood, songs listened to, and location information. Consumers can seek to share data in exchange for the advantages from digital platforms on which they have shared their private data to gain a functional benefit, or to gain enjoyment, entertainment and pleasure.

#### **Utilitarian motivation**

Financial benefit is one of the main utilitarian motivations for private data sharing. A majority of consumers' sharing data behaviour were driven by financial returns (Milanova & Maas, 2017). For example, Dimitriu and Guesalaga (2017) found that online marketing campaigns can easily gain users' data because they always giveaway some monetary returns such as gifts, vouchers or discounts to consumers. Seeking, gaining, and controlling information are the other sort of motivations which drive consumers to share data. As James, Warkentin, and Collignon (2015) considered, consumers information-seeking motivation may hinder their private data protection. For instance, Chamlerwat et al. (2012) found that consumers report they are more likely to make purchase decisions after referring to their peers' shopping reviews via Twitter or similar social media platforms. Some social media platforms offer grouping functions, thus users could select their extent of information exposure (James et al., 2015). It means that users' privacy control can be determined in part by consumers' extent of willingness to share their private data (Prince, 2018).

James et al., (2015) indicate that social networking is a significant motivation on consumer private data sharing via social media platforms. Real-time communication tools such as Facebook messenger and Wechat are applications that facilitate peoples' interaction

more frequently than ever. Social media created a public space for consumers to interact with peers and commercial brands. For example, Dimitriu and Guesalaga (2017) mentioned that consumers would like to share their brand experience and interact with brands, which might related their taste of life through Facebook. Another utilitarian motive for sharing data stems from acquiring efficiency and convenience. For instance, consumers can save time and money and fuel if they chose shopping online, but in the meantime they are sharing their contact information, browsing habits and personal address with such platforms (Nisar & Prabhakar, 2017).

Zhang, Feng, and Chen (2018) also found that a self-expression motivation drives users' social sharing as a sort of utilitarian motivation. As Cheung, Chiu, and Lee (2011) show, users create their profiles via social media to gain social capital. For ordinary users, self-expression behaviour could correct their social awareness (Orehek, & Human, 2017). But for micro celebrities, sharing their privacy for instance selfies, daily life videos, reviews and opinions via social media platforms were a job of performative self-brand building (Khamis, Ang, & Welling, 2017).

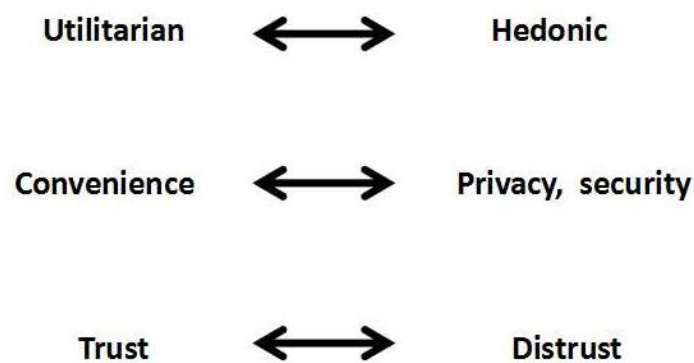
### **Hedonic motivation**

Hedonic motivation is any behaviour for consumers driven by a desire to enjoy, be entertained by, or to take pleasure from consumption. Jayawardhena (2004) mentioned that consumers' hedonic motivation drove them to accept e-shopping behaviour. Recreational motivation resembles exploring the digital consumption world through practicing technology (Viswanath, James, & Xin, 2012). According to Xu, Ma, and See-To (2010), watching videos and playing games via mobile apps were motivated by hedonic causes. Yet, consumers might not realize that their watching history list is also a form of private data sharing to the platforms, if they chose to click yes to accept the privacy policy and terms. Consumers'

collaborative consumption behaviour is also a kind of sharing that involves data (Hamari et al., 2016).

### **Motivational conflicts**

Consumers' motivations for private data sharing are complex. In general situations, consumers could be motivated by both utilitarian and hedonic reasons. However, consumers can struggle between utilitarian and hedonic motivations such as in the luxury consumption environment, consumers could not gain discount but could have fun in luxury brand campaigns on social media platforms (Martín-Consuegra et al., 2018). In e-shopping purchase decision procedure, consumers rely on peers' reviews which tend to utilitarian motivation, yet the behaviour of searching and browsing endless options via an app or browser can be hedonic. If consumers make an impulsive shopping decision online, the hedonic motivation won (Kim & Eastin, 2011). It is believed that both utilitarian motivation and hedonic motivation effect consumers behaviour on private data sharing.



**Figure-2: Motivational conflicts for exchanging data**

## **2.3 Marketer insights of private data**

### **2.3.1 Data management**

Consumers' personal data can be mined for its tremendous business worth (Chao, Yang Li, Miklau, & Suciu, 2017). Resource-based organizations rely on user-generated content to improve their daily business. For example, Facebook provides a platform for people to share private information, but did not supply content by itself. Consumer private data emerges from a variety of content paradigms such as messages, photos, video, user browsing history, and footprints. If Google Maps could not gain access to consumers' data, it likewise would be rendered less able to improve user experiences. On the other hand, consumers might not enjoy and reap the full benefits of a location-enabled map service on a smart device if they refuse to provide private information. It seems that this situation is a Nash Equilibrium, considering both sides is a direction of trade-off.

Acquiring data is just the first step to approaching private data on the long digital highway. For example, Graeff and Harmon (2002) mention that marketers have long tended to gather and gain detailed consumers' data such as time, order amount, and frequency of purchase. But today, analytics dominates the process of in-depth data mining. The Big Data Analytics Capability (BDAC) model could effectively influence firm development and performance (Wamba, Gunasekaran, Akter, Ren, Dubey, & Childe, 2017). Thus hundreds and thousands of enterprises are actively planning to gain more knowledge about technical abilities and more consumer data to fuel product and service development. Scholars such as Chao, Yang, Miklau, and Suciu (2017) even developed pricing frameworks to achieve personal data trading.

At the strategic level, consumer private data is equal to an enterprise's core competitive advantage. For instance, Erevelles, Fukawa and Swayne (2016) showed that

capital resources could utilize consumers' data to enhance an organizations' competitive power.

### **2.3.2 Trust management**

Trust becomes a major consumer motivation for selecting, downloading or experiencing a digital, online service. Consumers' concerns about their privacy is an increasing trend in online marketing (Graeff & Harmon, 2002). If a consumer and a service vender establish a trustor-trustee relationship, they could develop a long-term trust (Bauman & Bachmann, 2017). However, trust is a significant ethical issue in relationship marketing (Walker, 2016). Although consumers may choose to permit the sharing of private data to a digital platform based on trust of the platform, many are not in control of their data, and their information still faces leak risks. For instance, the average consumer does not spend enough time to gain knowledge about security and right for privacy, clicking "accept" without reading lengthy privacy policy agreements (Walker, 2016).

Trust management is a major goal for marketers. Winning consumers' trust means that an entity could win users' confidence. According to Yan, Zhang, and Vasilakos, (2014), trust management can enhance consumers' venture awareness about their private data and guide them to make more rational purchases. If a data-based company wants to maintain a long-term relationship with consumers, it should consider customers' privacy and security to win their trust before using its product. For example, Song, Shi, Fischer, and Shankar (2012) suggest that cloud computing firms should operate data protection as a significant service for users to achieve sustainable development goals. Thus trust management could be an imperative tactics for all service suppliers. According to Walker's (2016) Sharing–Surrendering Information Matrix, consumers' attitudes about privacy safeguarding and behaviours about information exchange depend on their reported degree of trust in different platforms.

As a result, data from the digital world has become a medium of commercial exchange. Consumers get benefits from many applications and devices for free in terms of money payment, but they give access to their personal data in exchange for these benefits. In this way, data is a new pattern of currency.

## **2.4 Exchange theory and relationship marketing**

### **2.4.1 Exchange Theory**

Kotler (1972) suggested that the concept of marketing exchange encompasses transaction activities between institutions and their trading partners. Bagozzi (1974) further theorized that an exchange system is composed of different social roles, their relationships, and their specific activities within the formative relationships under variable factors. Bagozzi (1975) also demonstrated that exchange theory not only concerned exchange of tangible objects, but also referred to exchange of intangible information and dealings which happened among more than two roles. Frazier (1983) posited that value exchange is how institutional partners interpret their activities in the exchange relationships that exist in channel marketing. For example, Franklin and Jule (1987) propose that marketing is the procurement of value exchange under different relationships. Bagozzi (1975) classified exchange into three types: Conditional (two party exchange directly), extensive (three parties benefit each other through indirect exchange) and complicated (each of three parties join at least one exchange). Researchers tend to seek differences among the variety of exchange relationships. For instance, Hirschman (1987) found that men were more willing to use suppliers to exchange extrinsic appeal, while women pursued intrinsic exchange in a complex exchange setting. In the matrix of distinct systems of exchange, Biggart and Delbride (2004) considered the communal system.

Researchers in other disciplines investigated a similar notion of exchange. Social exchange theory in sociology can be traced back to the 1920s, defined as a behaviour with reward expectations in which one individual gives benefit to another through an exchange relationship. Exchange was regarded in the social exchange perspective as a sort of social action which generated financial and societal returns (Lambe, Wittmann, & Spekman, 2001). Cropanzano and Mitchell (2005) found that people who are willing to give a benefit don't seek immediate repayment because they hold the original social intention in exchange.

Exchange is thus an ageless and significant topic in marketing research, especially relevant in the digital era. Taken together, though exchange of resources such as money and time is given prevalence in marketing's perspective on exchange, the exchange of other forms of value is also a prevalent consideration in relationship marketing, and social norms driving social exchange theory consider social actions and individual behaviours as a relevant resource to exchange.

#### **2.4.2 Exchange tangible or intangible goods**

Buying goods or services are both types of purchase behaviour. Consumers hold different purchase habits toward tangible and intangible goods, however. For example, people are accustomed to buying food from a supermarket and consuming it physically, but could not purchase and consume a concert ticket from an entity shop. Tangible goods are the products that people can touch, they might taste it or handle it. Intangible goods could not be touched and felt, and are often experienced as services and convenience (Zeithaml, 1981). The majority of service products tend to be intangible goods (Vargo and Lusch, 2007). A consumer is willing to buy a tangible goods through either shopping mall or online shop. If he/she is willing to buy an intangible products, they might prefer to find virtual service suppliers.

For instance, consumers prefer to exchange their private data to take advantage of services provided by digital platforms. Using social media such as Instagram might not be charged via monetary payment from a user to the platform providing the service, but the act of exchanging has already created a transaction procedure through data as currency.

### **2.4.3 Relationship Marketing**

#### **Relationship marketing theory**

Relationship marketing is a sub-discipline of marketing which inspired heated debate in the 1990s (Möller, & Halinen, 2000). Dwyer, Schurr, and Oh (1987) considered the buyer and seller relationship as a long-term, mutual exchange relation. Relationship marketing derived from several marketing fields such as services marketing, database and direct marketing, and marketing channels and logistics (Möller & Halinen, 2000). Relationships in marketing are diverse. For example, individuals towards individuals, institutions to consumers, or organizations versus organizations. These relationships could exchange all sorts of resources in a marketplace (Möller & Halinen, 2000). As Internet technology has flourished, privacy was considered by scholars in relationship settings. For instance, Luo (2002) found that establishing online trust could help consumers forgo misgivings about using their personal information as the target of booming e-commerce sites.

#### **Communal and exchange relationships**

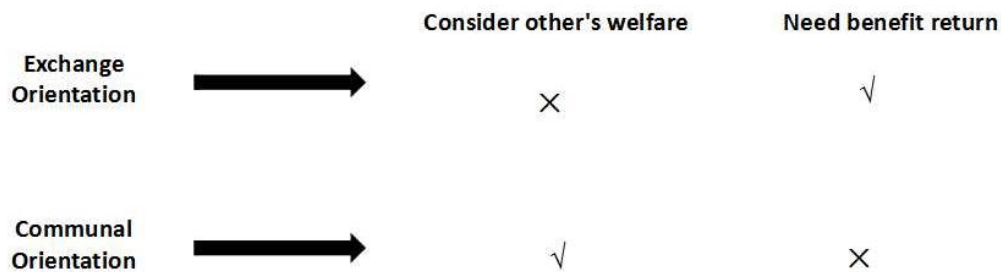
In the marketing world, scholars divided main relationships into communal and exchange orientation. If the relationship is based on exchange motivation, the roles might pay the price for others while asking for repayment in return (Vanperen & Buunk, 1991). Money or goods are exchanged directly. A communal orientation, however, is a different relation from exchange orientation because of the distinct perspectives in return of benefits and reciprocity (Clark & Mills, 1979). In communal orientation relationships, exchange partners

do not desire immediate benefit return, in contrast with exchange-oriented relationships (Clark & Waddell, 1985).

Scholars have sought to verify the differences between communal and exchange orientations. According to Vanyperen and Buunk (1991), U.S. consumers, with a view to fairness and reciprocity, emphasize exchange orientation more than the Dutch, while communal orientation was relatively ignored. Batson (1992) believed that people might consider others' happiness within communal relationships, while exchange relation lead people to consider only immediate fairness and repayment. Thus, if a person does not concern themselves about others' welfare, the communal relationship would disappear (Clark and Mills, 1993)

To extend this concept, this thesis hypothesizes that customers might view the relationship between private data and service as a communal exchange. Digital technology might change the form of currency, but the function of currency is not altered. For example, people prefer to swipe their debit card instead of paying via cash or check when they go to supermarket, and smartphone payments via WeChat have emerged as a prevalent force in China in recent years (Qu, Rong, Ouyang, Chen, & Xiong, 2015). In much the same way, consumers today exchange the convenience and enjoyment of digital services for access to their data, from web browsing cookies to locations and brand preferences. However, if consumers perceive digital marketplace exchanges— such as downloading and using a free map application on a smartphone— as a form of communal exchange with an imbalanced set of benefits exchanged by both parties, they might overlook the ways in which their usage of digital content and products grants them a benefit that is incurring “a specific debt or obligation to return a comparable benefit” (Mills & Clark, 1994). People use money to pay their bills to exchange tangible products, and though they have already used private data as currency to gain intangible services such as social media applications, individuals might not

notice they have treated their data as currency to gain access to these digital content and products.



**Figure-3 Communal vs Exchange Orientation**

## 2.5 Conclusion

This thesis proposes that private user data is akin to currency in the digital world. Consumers exchange their private data for the convenience of online offerings in an active manner, such as when they upload photos, videos, or content to social media sites that are fueled by advertising dollars, or in a passive manner, typically by clicking “accept” to user agreements or by downloading smartphone applications that can link to social media content and/or monitor user data such as usage of the app and geographic location.

Technology alters people’s ways of payment. Before e-banking was prevalent, consumers felt less pain of payment when they used credit cards to spend money rather than cash (Yeung, 2014). According to Yeung (2014), as internet companies optimized the interface to become more user-friendly, consumers began turning in greater numbers to online payment methods. Consumers hand over their personal data to platforms for exchanging convenience or other service (Song, Shi, and Fischer, 2012). But it seems a trap because the idea of these convenient services being “free of charge” might imply or lead consumers to consider their private data has little worth. Walker (2016) concludes that

consumers should be concerned about their privacy and trust for data protection. Digital currency such as Bitcoin has already shaped as a transaction medium but could not replace the traditional payment modes (Glaser et al., 2014). However, today's data is valuable as a competitive advantage and is already being utilized as a form of currency for consumers in the e-business world.

Consumers can enter into marketplace relationships that are communal-oriented or exchange-oriented in nature (Mills & Clark, 1994). Exchange relationships characterize much of consumer-to-business encounters and involve anticipated immediate reciprocity, such as exchanging a set dollar amount of cash in exchange for a particular product or service. Communal relationships, on the other hand, involve interpersonal social norms and a sense of delayed, longer-term reciprocity, such as helping a friend move house while knowing that one day, they might repay the favour. It is possible that consumers view sharing their personal data as participating in a communal exchange with a business, and thus might not be accessing perceptions of exchange value that would treat data as a currency.

In relationship marketing, people holding an exchange orientation might tend to get benefit from relationships and services, while people holding a communal orientation might not care about the immediate rewards and profit (Clark & Waddell, 1985). Thus, this thesis seeks to test consumer willing to purchase tangible goods as the dependent variable. One independent variable is that consumers will have higher willingness to purchase tangible products when using money as currency. However, currency type on purchase of tangible products might be moderated by the perception of exchange (vs. communal) orientation. The literature review suggests that consumers will have lower willingness to purchase tangible products when using data as currency. This could be moderated by higher perception of communal orientation.

Formally, this thesis predicts that:

**H1:** Consumers will have higher willingness to purchase tangible products when using money as currency.

**H2a:** Consumers will have lower willingness to purchase tangible products when using data as currency.

**H2b:** This effect will be moderated by higher perception of communal orientation.

**H3:** This effect of currency type on purchase of tangible products will be moderated by the perception of exchange orientation.



**Figure-4: Conceptual model of hypothesis**

## Chapter Three: Research Design

Chapter three will show the whole procedure of designing the research. Research should be based on both theory and quantitative design when the researchers decide to utilize multivariate analysis techniques for transforming data into knowledge (Hair, Black, Babin & Anderson, 2014).

According to Hopkins (2008), quantitative research design is defined as either a descriptive or an experimental study which sets up quantifying relationships between independent variables and dependent variables. Field (2013) mentions that validity is a way of keeping the measurement error to a minimum level, which helps to ensure the research will be constructed appropriately. According to Hair et al. (2014), validity of quantitative design is interpreted chiefly by construct operationalization and measurement. To ensure external validity, researchers should be concerned about the situation such as the study settings, time arrangement, the people and measurement tools (Calder, Philips, & Tybout, 1982). In contrast, internal validity means that the variables are controlled to maintain a causal relationship with each other (Calder, Philips, & Tybout, 1982). Research designs must have construct validity and correctly operationalize the concepts under consideration to ensure internal validity (Calder, Philips & Tybout, 1982).

In this study, a quantitative research design was undertaken to identify consumers' actual behaviour of purchasing tangible goods using either data or cash as a currency. The goal was to explore consumer insights of the potential exchange value of their own private data. In the beginning, these two conditions were set for this study as independent variables. Condition 1 was allowing participants to use cash as currency to buy a tangible item (in this case, a USB flash drive) and condition 2 was allowing the participants to purchase the same USB flash drive through data as currency.

To make sure the study design is externally valid, the researcher chose the same venue to ensure the population sample might be drawn from a similar group of people. Over the course of four days, the researcher set condition 1 and condition 2 alternately to help ensure study validity via controlling for time-of-day effects and any other random patterns from foot traffic on campus. The study was conducted over two weeks, mid-semester following a semester break, in September and October. In both condition 1 and condition 2, participants completed the same questionnaire with the same content in the same period. The same information sheets were provided by the researcher in each condition. However, as the weather condition might be difficult to predict, the researcher selected the same time period in each experimental day to set up the study. At the same time, the researcher tried her utmost to recruit the same people as assistant to help the researcher to gather the data and sell her USB drives.

The dependent variables of this experiment were first and foremost actual purchase behaviour of the tangible item for sale in this field study. Further dependent variables were collected from questionnaires, which were completed by respondents. For example, participants were asked to answer question such as “Some app developers collect and use your data to create a better service experience. How willing are you to click ‘accept’ or ‘agree’ to allow apps to use your data in this way?” to test their willingness to allow platforms to utilize their private data. This question was another measure of the extent of consumers’ willingness to provide their private data in the marketplace. It forms another variable to interpret why and when people exchange their data for access to desired resources, therefore treating their data as a form of currency.

### 3.1 Methodology

The proposed data collection method is an experiment in the form of a field study. This field study aimed to measure consumers' actual behaviour in purchasing tangible goods. According to Persaud (2012), a field study is any research conducted in the real world without direct manipulation of the environment. For control reasons, the researcher varied conditions: (1) Passers-by could purchase a tangible good via a cash payment method; or (2) passers-by could buy the same tangible good through a data payment method.

This field experiment took four days over two weeks at a central plaza on campus. Condition 1 was set on day 1 (week1) and day 3 (week 2), and condition 2 was set on day 2 (week 1) and day 4 (week 2). Table 3 shows the study design as it varied across data collection times. The data collection period was from 10 am to 2 pm each day no matter which condition was created because the researcher planned to control the setting as much as she possibly could.

Date	Days	Condition	Venue	Time	Collectors
25th September 2018	Day 1	1, Buy via cash	Hikuwai Plaza	10:00am-14:00pm	Claire, Vrinda
26th September 2018	Day 2	2, Buy via data	Hikuwai Plaza	10:00am-14:00pm	Claire, Vrinda
1st October 2018	Day 3	1, Buy via cash	Hikuwai Plaza	10:00am-14:00pm	Claire, Trang
2nd October 2018	Day 4	2, Buy via data	Hikuwai Plaza	10:00am-14:00pm	Claire, Vrinda

**Table-3 Experiment settings**

However, it was a field study and an experiment. There were still many limitations which acted in the real world. For example, weather conditions could be an unpredictable factor that might impact the total amount of passers-by or their willingness to stop and engage at the researcher's table. The researcher could not select the people who passed by,

thus participants randomly joined in this study whether they were students or staff of AUT or other passers-by who just walked by this area. It means that the variability in participants is also uncontrollable.

For the field study, there were two conditions: one condition was that the consumers could only use cash as currency to purchase a USB flash drive, the other condition was that the consumers could only use data as currency to buy a USB flash drive. Participants observed a sign offering the item for sale for \$3 (cash cost, condition 1) or for one shared personal photo (data cost, condition 2). These conditions were the experimental design which allowed the researcher to observe actual consumption behaviour based on the two settings and sought any effects from consumer insights about the value of their private data when used for exchange.

### **3.2 Recruitment procedure**

Participants were passers-by from Hikuwai Plaza at the Auckland University of Technology City campus on four days from 10:00 am to 2:00 pm (25th September 2018, 26th September 2018, 1st October 2018, and 2nd October 2018) in order to compare the two conditions (1) cash payment and (2) data payment. As a result, 20 participants purchased the USB flash drives through cash payment and 127 participants bought the USB flash drives via data payment. At the same time, a total 147 copies of questionnaires were completed by the respondents.

Hikuwai Plaza is an open area of the city campus of Auckland University of Technology which connects the school library and leisure space for restaurants, stationery and book store, and the campus recreation center. The passers-by from this venue might be of all ages, though are typically students and staff of AUT.

The researcher set one purchase condition for each day and sold the same tangible good each day - USB flash drives. Originally, the researcher considered an AUT T-shirt as the tangible goods for selling under this setting but such a logo T-shirt costs \$27 each. The T-shirt was considered as an item that was too expensive for the researcher to purchase en masse, and in general, more expensive than most people would choose to spend to purchase. There were variety of colours of T-shirt, and the researcher also could not tell which colour could be sold if different individual had his/her preference in colours. If the researcher bought the T-shirt as tangible goods, the researcher could not gain enough samples because of the limited budget. Then, the researcher also thought about cupcakes. Cupcakes are typically not too expensive and not gender specific, and one cupcake might cost around \$3. However, cupcakes are hedonic purchases that are more easily related to appetite satiation and time-of-day effects. At last, the researcher decided to sell USB flash drives. The main reason for selling USB flash drives is that the USB flash drive is a basic, functional item that is not gender-specific and is used as data storage and backup.

Importantly, consumers should only decide to purchase a USB if they might need one, and not because they are hungry or attracted to a certain colour or design. The researcher set the price of a portable USB flash drive as \$3 (or 1 shared photo on social media, using a participants' private data) which was a considerably competitive price while the retailing price would normally be around \$10. Attracting participants to buy any non-necessity might expose the hidden motivation of consumers.

There was a simple printed sign displayed in front of the table each day of the study. For the day of condition 1, the sign board would follow the condition 1 instruction (\$3 cash to buy an 8GB USB flash drive); for the day of condition 2, the sign board would follow the condition 1 instruction (share 1 photo with # AUTMKT to buy an 8GB USB flash drive). See Figure 5 and Figure 6 for a copy of the sign stimuli for condition 1 and condition 2.



Figure-5: Sign board-condition 1

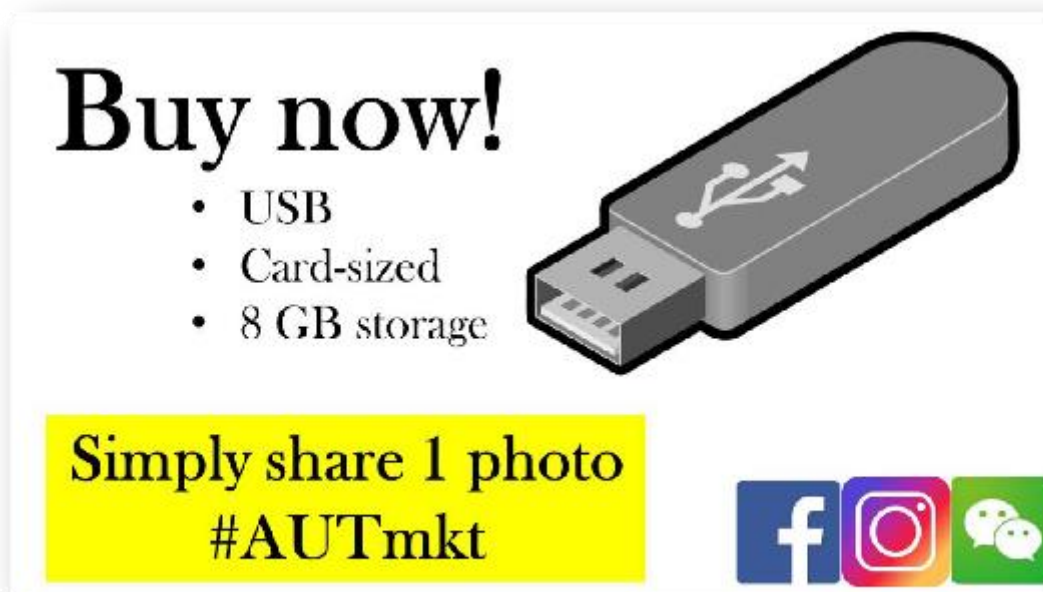


Figure-6: Sign board-condition 2

In condition 1, participants were asked to complete a questionnaire if they chose to pay \$3 cash to buy the USB flash drives. In contrast, respondents in condition 2 were asked

to complete the questionnaire and share 1 photo with #AUTmkt through their social media for purchasing the USB flash drives. If the participants did not want to purchase, they were then not included in the experiment. The researcher recruited one assistant who could help the respondents to complete the whole procedure.

The privacy of participants was well-protected. The questionnaires were collected with no accompanying identifying information, making them effectively anonymous as their responses were only were tagged with condition 1 or condition 2 for data analysis purposes. The researcher did not track or store the participants' social media information but only collected the completed questionnaires and viewed the shared photo as data. These questionnaires and the study protocol were approved for use by AUT's Ethics Committee. All the respondents were free to leave if they did not want to continue the procedure in any step. The AUT Ethics Committee had also approved the information sheet and ethics application of researcher which are attached in Appendix 3.

### **3.3 Data preparation**

The researcher prepared 150 USB flash drives with a customized AUT Marketing logo and 150 copies of questionnaires with uniform contents and AUT logo. A display table was used for showcasing the tangible goods she sold and providing space for pens and questionnaires with clipboards. The study setup is shown in Figure 7 below.



**Figure-7: The study location and stimuli**

The information sheets which briefed the research study were printed and displayed to explain the background to the participants (see Appendix-2 for a copy of the information sheet). When a questionnaire was completed, the researcher ensured the condition tag of the questionnaire was right before placing it in a collection box. For example, the researcher printed 75 condition 1 and 75 condition 2 questionnaires, with the different conditions previously tagged with number 1 or 2 in the page header. In reality, however, condition 2

participants far outnumbered condition 1, thus the researcher revised the condition tag when needed rather than printing out new versions of the questionnaires.

### **3.4 Data analysis procedure**

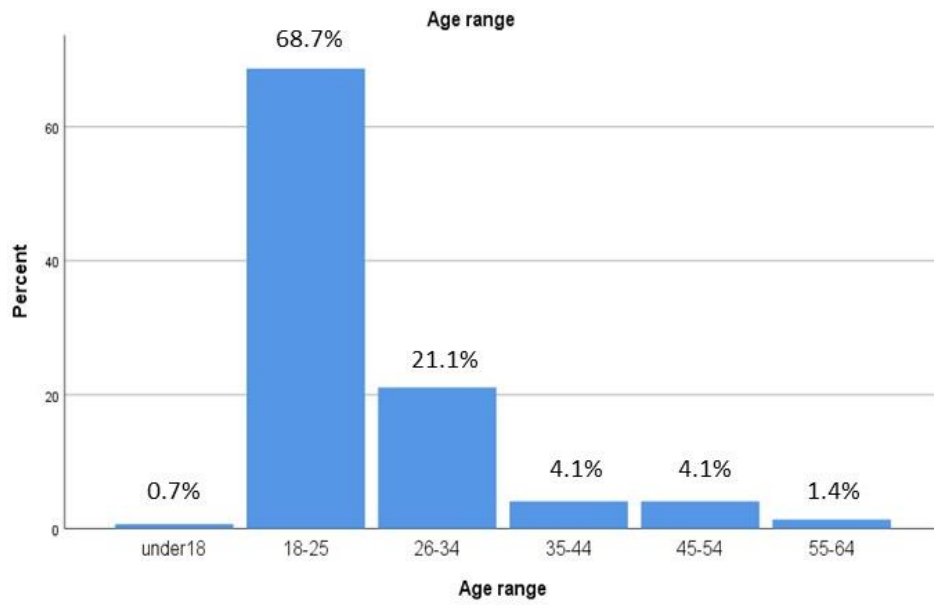
Hair et al. (2014) consider multivariate analysis as a cluster of data analysis techniques which deal with research data. After data collection, the gathered data was analyzed through IBM SPSS software. The answers from questionnaires were first coded by the researcher and were entered into a data file based on IBM SPSS software. Comparing means can be an effective statistical tool for discovering the difference between two groups (Field, 2013). To identify the differences among these variable groups, the main methods were means comparison analysis, T-test, ANOVA, linear regression, and logistic regression.

### **3.5 Participants**

There were 147 participants who completed the questionnaires and purchased the USB flash drives via two types of currency. In condition 2 (days 2 and 4), 127 respondents chose data payment whereas in condition 1, only 20 participants responded to the prompt to pay via cash (days 1 and 3). The age range of the respondents was from under 18 years old to 55-to-64 years old. The majority group was 18 to 25 years old, as 101 participants ticked their age range in this category. The two gender groups were composed of 81 males and 66 females.

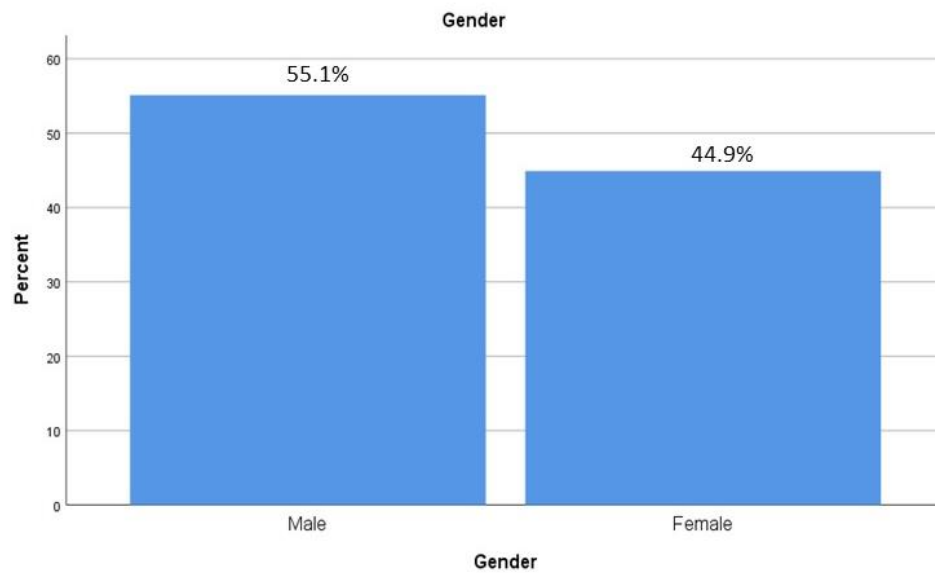
### **3.6 Participant demographics**

Figure 8 shows that the majority participants are in the 18-to-25 age group, which was 101 people. The second large age group was total 31 people from 26-to-34-years old. The 35-44 years old and 45-54 years old group were the same amount, 6 people each group. Only one respondent's age was under 18 years old.



**Figure-8 Age Range**

Figure 9 shows that 55.1% of participants are male and 44.9% of participants are female.



**Figure-9 Gender**

### 3.7 Stimuli

The field study was designed to test consumer behaviour toward purchase of tangible goods via two distinct currency types. The main goal was to assess whether operationalizing the form of payment as data, vs. cash, will change the behaviour of consumers when purchasing a tangible good. How likely are consumers to make an actual purchase of a tangible item (in this case, a USB flash drive) through different currency types such as cash payment or data payment? The field study allows for a test of actual behaviour, versus just purchase intention. At the same time, the researcher designed a questionnaire with 8 questions to collect more consumer insights about mobile payment and the value of their private data.

The questionnaire (see the questionnaire in appendix 1) started with asking respondents whether they own a smart phone or not. After the simple yes or no question, participants answered about their typical activities via smart phone such as ‘making phone calls’, ‘texting family and/or friends’, ‘using social media’, ‘watching videos’, ‘playing games’, ‘shopping’, and ‘searching information’. The participant was then asked to tick the applications they typically use, for example, Twitter, Facebook, Instagram, Snapchat, Weibo, WeChat, What’sApp, Google Maps, Uber, UberEats, Youtube, Google. The purpose of asking activities-related questions was to identify the consumers’ behaviour and extent of data sharing on their smartphones.

Respondents were also asked to tick their monthly data usage, which again might be related to their consumption behaviour through smart phone. Following this, three questions were about mobile payment history, frequency of mobile payment, and preferred payment mechanics were asked to identify consumers’ payment types and preferences of payment. The payment-related questions were highly connected to the main research question

concerning the consumers' insights of the exchange value of their private data. The questionnaire also asked whether the respondents tend to accept privacy policies when they download applications via smart phone. Finally, participants selected their willingness to allow platforms to use their private data from a 7-point scale: 'Not at all willing', 'Very little willing', 'Somewhat willing', 'Neutral', 'Considerably willing', 'Willing', and 'Very much willing.'

The list of all variables is shown below and the whole questionnaire is shown in Appendix 1.

<b>Independent Variables</b>	<b>Dependent Variables</b>
<b>Condition</b> 1. Cash as currency; 2. Data as currency	<b>Willingness to allow apps use personal data</b> After a background description, list 7 item scale; participants were asked to tick the extent of willingness.
<b>Extent of digital engagement</b> Total apps to show the extent of participants' digital engagement	<b>Tendency to accept privacy policies via smart phone or electronic-devices.</b> Yes or No answer.
<b>Motivation to smart phone</b> Sum up the total activities and classify the 7 items into 'hedonic-use' and 'utilitarian-use' to figure out participants' motivation of using their smart phone. Hedonic-use: 'watching videos', 'playing games' or 'shopping'; Utilitarian-use: 'making phone calls', 'texting family or friends', 'using social media', and 'searching information'.	<b>Preferred payment mechanism</b> There were 4 types of payment for participants to select.
	<b>Frequency of payment via smartphone</b> 7 item scale, to test the participants' payment frequency
	<b>Phone pay history</b> Basic Yes or No answer to see their payment history via smart phone

	<b>Data usage for per month</b> 8 item sale, the participants were asked to tick their data usage per month excluding the wifi-condition
	<b>Apps typically using</b> 12 items as example to indentify what apps the participants usually use.
	<b>Activities for smart phone</b> 7 items, participants were asked to tick their activities they usually use the smart phone for
	<b>Own a smartphone</b> Yes or No answer
	<b>Age</b>
	<b>Gender</b>

**Table-4: Independent and dependent variables**

### **Independent variables**

The main independent variables in this study was the type of condition: cash as currency and data as currency. For cash as currency, it means that the participants were invited to pay \$3 cash as payment method to purchase an 8GB USB flash drive. Under the data as currency setting, respondents were invited to use private data via sharing a personal photo on their social media to buy an 8GB USB flash drive. To attract consumers, the researcher set one 8GB USB flash drive's price as \$3 or 1 #hashtagged photo, which is below retail price.

To emphasizing the data payment, respondents were asked to share a photo to one of their social media apps and hashtag the photo with #autmkt. This is a common practice in e-commerce and giveaways. The hashtag is a sort of topic-based tag of big data (such as a phrase) which can be searched and discussed by a group of users in social network

platforms such as Twitter, Instagram, Facebook (Zhu ,2016). As Berreby (2017) mentioned, people are accustomed to sharing their photos, moods, locations or articles through social media platforms. In particular, consumers can be motivated to share via hashtag-campaigns online so that they could gain financial benefits from the organizers (Dimitriu, & Guesalaga, 2017). For example, Antoine (2016) found that Audi encouraged Twitter users to experience R8 driving via tweeting hashtag ‘#WantAnR8’ campaign in 2011. In ordinary e-commerce giveaways, Kentucky Fried Chicken (KFC) launched an Instagram hashtag ‘#HowDoYouKFC’ campaign to promote its quick-service restaurants through branded user-generated content (Laestadius & Wahl, 2017). User-generated hashtag giveaways and contests have emerged as a valid social media marketing tactic to raise brand awareness. In such a campaign, a business typically asks its followers to post a piece of content on a social network, accompanied by a specific hashtag, in exchange for a giveaway or chance to win a prize (Kilroy, 2018).

Using a hashtag as a social media marketing tactic is also a widely adopted promotional practice by social media influencers and it could bring more sales (Kapitan & Silvera, 2016). However, hashtag campaigns can also lead to negative effect. For instance, McDonalds started with hashtag #McDStories which aimed for consumers’ warm stories about Happy Meals. But users instead turned to share opposite stories through hashtag #McDHorrerStories (Antoine, 2016).

For this thesis, the researcher did not track these hashtags and include into data analysis because of ethics reason and to preserve participants’ privacy. This practice for the data condition was intended to illustrate an exchange to consumers, that the consumers are sharing their data and personal photos on their social media as currency to gain access to something they desire.

Before a deal was completed and participants bought their USB flash drive, participants were asked to fill a questionnaire in both conditions. These two conditions aimed to identify the actual consumer behaviour different insights between the two payment groups.

A second independent variable, extent of digital engagement, was drawn from the question around self-reported activities for smart phone such as 'using social media' and the apps that are typically used such as 'Facebook,' aimed to identify the participants' typical level of activity on their smart phones. Participants were also asked to tick their monthly data usage to show the consumers' usage condition of the mobile data service, forming a third IV.

Finally, a third independent variable was created from the question of ticking the activities that the participants typically use the smartphone for (such as making phone calls, or playing games). There motivations to use their smart phone could be divided into two types: utilitarian and hedonic. For utilitarian motivations, the participants might choose 'making phone calls', 'texting family or friends', 'using social media', and 'searching information'. For instance, people used social media to maintain their daily networking online (James, Warkentin, & Collignon, 2015). For hedonic motivations, the respondents could choose from 'watching videos', 'playing games' or 'shopping'.

### **Dependent variables**

The most important dependent variable is likelihood to purchase tangible goods. Every condition was set for two different days to test the consumers' behaviour of buying tangible goods. One condition was cash payment which allowed the consumers to buy the USB flash drive via cash, \$3. The other condition was data as currency in which participants who

wished to purchase the USB flash drive did so through data payment, via sharing a photo with a hashtag on their chosen social media platforms.

Second, a simply “yes or no” question was presented to seek for the respondents’ phone pay history. The fourth dependent variable, the frequency of payment via smartphone, was divided into a 7-point scale: ‘never’, ‘rarely’, ‘occasionally’, ‘sometimes’, ‘frequently’, ‘usually’ and ‘always’. The question of frequency of mobile payment was designed to uncover participants’ true consumption behaviour via their own smart phone.

Fifth, participants were asked to select their preferred payment mechanism, for example, cash, check, debit/credit card, and e-banking (online/mobile). Seventh, consumers’ tendency to accept privacy policies via smart phone or e-devices was tested by the research via a simple “yes” or “no” answer.

The final dependent variable is the participants’ willingness to allow apps and platforms to use personal data, presented as 7-point Likert-type scales. Allowing platforms to use consumers’ private data is one way to measure consumer willingness to treat their data as currency to gain access to desired services. This question aimed to gain the respondents’ deep insights about the value of their private data. In addition, the gender and age range option were provided by the questionnaire for the participants to choose.

In conclusion, chapter 3 introduced the chosen methodology of this research and outlined the field study setting, the stimuli, and the independent variables and the dependent variables. In the next chapter, the researcher will analyze the collected data and use statistical analysis methods to determine the effects of this study and test the research hypotheses.

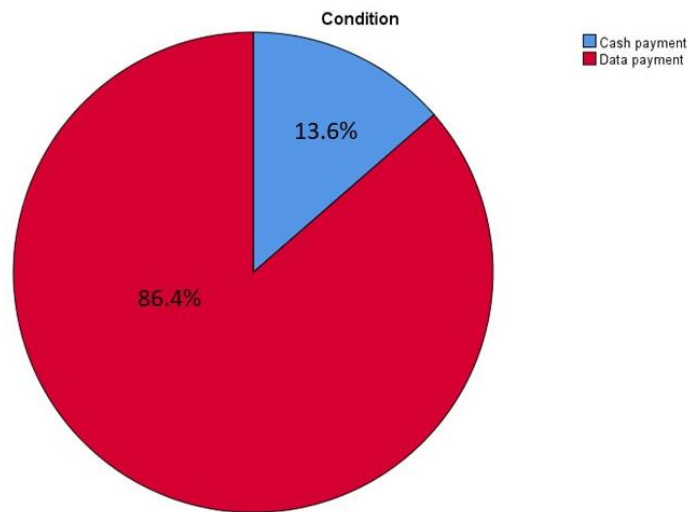
## Chapter Four: Findings

This chapter will discuss analysis of the data from the field experiment and shows the results of the statistics analyses. For example, the main effect will identify the likelihood of consumers' purchasing tangible goods in two conditions. And then consumers' extent of digital engagement will be tested while under the different conditions or overall situation. For acceptance of privacy policies, the researcher found a difference effect if consumers hold hedonic or utilitarian motivation for their digital engagement. In addition, a gender effect was also found by the researcher.

### **4.1 Main effect: likelihood to purchase tangible products when using cash or data as currency.**

H1: Consumers will have higher willingness to purchase tangible products when using money as currency.

H2a: Consumers will have lower willingness to purchase tangible products when using data as currency.



**Figure-10** Percentage of population in two conditions

This field experiment happened in the real world, which means that less was under the researcher's control, and any situation might happen but could not be predicted. This study was designed to test the actual behaviour of purchasing tangible goods under two conditions. The most significant result is shown as a pie chart (see Figure 3) which reveals that more consumers on a university campus preferred to pay with their data than with cash. There were 147 participants in total. Of those, 127 respondents chose data payment to buy the 8G USB flash drives. Only 20 participants chose to purchase the tangible good with cash as a payment method. The participants who chose to purchase in condition 2 (data as currency) accounted for 86.4% of the whole, while the respondents in condition 1 (cash as currency) made up 13.6%.

The researcher used a two-sample z test to determine the validity of the hypothesis that the two population means (those who chose to pay with cash vs. those who chose to pay with data) are unequal. This test assumes that the samples in the field study are independent and

each drawn from a normally distributed population. In the two-sample z-test, there was a significant difference between  $M=20$  in cash payment condition and  $M=127$  in the data payment condition ( $z=8.83, p<.001$ ). Thus, the hypotheses of H1 and H2 were rejected. In the field setting, consumers were significantly more likely to purchase tangible goods when using data as currency than when using cash as currency. This is, at least, when purchasing via data is operationalized via sharing of photos on social media with an accompanying hashtag.

#### **4.2 Consumers' extent of digital engagement by condition**

The researcher treated the activities used on smartphone as a measure of typical usage of digital data and apps. This becomes a measure of extent of digital engagement. Participants reported using from 0-12 apps, such as twitter, Facebook, WeChat, and Instagram. Using this measure as a gauge of typical digital usage, the researcher treated this as a dependent variable to determine if variations in digital engagement determine participants' willingness to allow platforms and apps to use their private data.

The dependent variable of interest was willingness to allow apps to use private data. The researcher ran a regression on each condition with extent of digital engagement as the independent variable. There was no significant difference among extent of digital engagement for the cash condition ( $t(1, 18) = 1.20, p = .25$ ), which is not a surprise given the low number of participants in this condition ( $N=20$ ). However, there was a significant difference among digital engagement for reported willingness to allow apps to use private data in the data payment condition. The significant and positive Beta weight in the regression ( $\beta = .141$ ) indicated that those with a higher extent of digital engagement in the data payment condition were more willing to allow platforms to use their data than those with a lower extent of digital engagement  $t(1, 125) = 2.77, p < .01$ . This finding shows that among those

already willing to share their private data to gain access to desired services and goods, participants who are higher users of digital apps are more likely to click “accept” or “agree” on privacy policies for apps.

#### **4.3 Consumers’ extent of digital engagement overall main effect**

How do consumers in the field study regard their willingness to allow apps to use their data, regardless of condition? The dependent variable of interest to answer this question is willingness to allow apps to use private data. The researcher ran a regression on all participants regardless of condition, with extent of digital engagement as the independent variable. There is a significant difference among extent of digital engagement for reported willingness to allow apps to use private data. The significant and positive Beta weight in the regression ( $\beta = .138$ ) indicated that those with a higher extent of digital engagement overall were more willing to allow platforms to use their data than those with a lower extent of digital engagement  $t(1, 146) = 3.09, p < .01$ . This indicates that whether participants pay cash or pay via data to gain access to desired services and goods, participants who are higher users of digital apps are also more likely to click “accept” or “agree” on privacy policies for apps.

#### **4.4 Hedonic vs. utilitarian motives for accepting privacy policies**

The dependent variable of interest was consumers’ reported intention to accept privacy policies. The researcher treated this as a main effect across all conditions. A logistic regression was performed to discover the effect of utilitarian-use and hedonic-use on the likelihood that the participants (yes vs. no) tend to accept privacy policies. The logistic regression model was statistically significant,  $\chi^2(7) = 21.579, p < .01$ . The model explained 33.1% (Nagelkerke R<sup>2</sup>) of the variance in tendency to accept privacy policies and correctly classified 93.2% of cases. The motivation of utilitarian-use for using the smartphone ( $p < .05$ )

was significant in this model. The motivation of hedonic-use for using the smartphone ( $p > .10$ ), however, was not significant in the model. This finding indicates that utilitarian motives for digital engagement, i.e., searching for information, were associated with an increased likelihood of accepting privacy policy.

#### **4.5 Gender effects**

The dependent variable here was frequency of making payments on smartphone. There was no significant differences between genders for the cash payment condition ( $F(1, 18) = .341$ ,  $p = .57$ ). However, there was a significant difference between men's and women's reported frequency of smartphone payments among those in the data payment condition. Men in the data payment condition ( $M = 4.20$ ) reported higher frequency of smartphone payments than women ( $M = 3.62$ ),  $F(1, 125) = 4.30$ ,  $p < .05$ . This indicated that among those already willing to share their private data to gain access to desired services and goods, men were the more frequent users of smartphone payments.

## Chapter Five: Discussion

Chapter five will discuss effects of the research combining with the testing of the original hypotheses and theories. Through interpreting the results of data analysis, this study might gain a deeper insight from consumers about how they perceive their value of private data in digital era. The findings of purchasing tangible products via cash or data as currency would indicate the higher or lower likelihood of consumers' willingness. The first part of chapter five will seek to explore reasons why the hypotheses were accepted or rejected. The second part of chapter five will examine theories about why consumers share private data, depending on different original intentions.

### 5.1 Testing the hypotheses

**H1:** Consumers will have higher willingness to purchase tangible products when using money as currency.

**H2a:** Consumers will have lower willingness to purchase tangible products when using data as currency.

The research design in the field study sought to test the two hypotheses about the likelihood of consumers' willingness to purchase tangible goods through different payment methods such as cash as currency or data as currency. Thus the researcher set two different conditions at the same venue to observe the real behaviour from the participants via a field study conducted in the real world. To test H1, the researcher set a condition that consumers could only buy the USB flash drive through cash payment. For the H2a, the researcher set a condition that allowed the consumers to purchase the USB flash drive through data as currency (sharing a photo from their mobile phone and sending it to one of their used social media platforms with hashtag # autmkt).

To gain insights of their value of private data under two conditions, either condition one or two, the participants were asked to fill a one-page questionnaire. The questions from the questionnaire mentioned participants' willingness about accepting the platforms to use their private data to update service purpose. The participants were asked to tick their extent of willingness from 7-point Likert-type scales such as 'Not at all willing' to 'Very much willing'.

Through conducting the field study, the main effect was that the hypotheses H1 and H2a were rejected. The lower willingness to buy tangible products if they use money as currency showed the opposite view, meaning H1 is rejected. The finding showed that there were 127 participants willing to use data as currency to purchase the tangible 8G USB flash drive, and only 20 participants were willing to use cash as payment to buy the same tangible 8G USB flash drive. Because consumers have higher willingness to purchase tangible products when using data as currency, H2a was also rejected. The reality of 86.4% respondents selecting data as currency to buy the tangible goods means that data as currency has already been widely-accepted by consumers.

To gain a deeper insights of consumers' view about their private data, the researcher found a few effects from the data analysis. From the results of the data analysis, the researcher found significant difference between ( $M=20$ ) in cash payment condition and ( $M=127$ ) in the data payment condition ( $z=8.83, p<.001$ ). For example, the more the participants engaged in digital activities in data as currency condition, the higher willingness to allow the app companies to use their data. If the participants are higher users of digital apps whether they chose cash or data as currency, they found it easier to accept or agree on privacy policies than lower app users. However, genders did not show significant differences in the cash as currency condition when the dependent variable was frequency of making

payments on smartphone. Men were more frequent mobile payment user than women in the data as currency condition.

<b>Hypotheses Testing</b>	
<b>H1: Consumers will have higher willingness to purchase tangible products when using money as currency.</b>	H1 was rejected. Consumers will have LOWER willingness to purchase tangible products when using money as currency. 13.6% participants used cash as payment to buy the tangible 8G USB flash drives.
<b>H2a: Consumers will have lower willingness to purchase tangible products when using data as currency.</b>	H2a was rejected. Consumers will have HIGHER willingness to purchase tangible products when using data as currency. 86.4% respondents selecting data as currency to buy the tangible 8G USB flash drives.
<b>Group difference between two conditions</b>	Significant difference between (M=20) in cash payment condition and (M=127) in the data payment condition ( $z=8.83, p<.001$ ).
<b>Consumers' extent of digital engagement by condition</b>	The more the participants engaged in digital activities in data as currency condition, the higher willingness to allow the app companies to use their data $t(1, 125) = 2.77, p < .01$ with the positive Beta weight in the regression ( $\beta = .141$ ).
<b>Consumers' extent of digital engagement overall main effect</b>	The participants are higher users of digital apps whether they chose cash or data as currency, they are easier to accept or agree on privacy policies than lower app users $t(1, 146) = 3.09, p < .01$ with the positive Beta weight in the regression ( $\beta = .138$ ).
<b>Gender effects</b>	No significant differences in the cash as currency condition ( $F(1, 18) = .341, p = .57$ ) when the dependent variable was frequency of making payments on smartphone. Male ( $M = 4.20$ ) were more frequent mobile payment user than female ( $M = 3.62$ ), $F(1, 125) = 4.30, p < .05$ in the data as currency condition.

**Table-5 Hypotheses Testing**

## 5.2 Testing the theories

The motivation of sharing private data might be differ from consumers. Main theories about the motivation to sharing were utilitarian cause and hedonic reason. O'Brien (2010) mentioned that consumers would share their private data when they were motivated by utilitarian or hedonic impetus in the e-shopping setting. Consumers might share their private data because of utilitarian motivations such as financial benefits, seeking information, and social networking or hedonic motivations such as watching videos, e-shopping, and playing digital games (Lambrecht and Misra (2016); James, Warkentin, & Collignon (2015); Xu, Ma, and See-To (2010)).

To gain deeper insights into consumers' motivations about sharing their private data, the researcher asked participants to tick-box their typical smartphone activities. The researcher listed four utilitarian motivation such as 'making phone calls', 'texting family or friends', 'using social media', and 'searching information'. Following three hedonic motivations were also provided by the researcher such as 'watching videos', 'playing games' or 'shopping'. To visualize this concept, the research also listed 12 commonly used application names these apps were: 'Twitter', 'Facebook', 'Instagram', 'Snapchat', 'Weibo', 'WeChat', 'What's App', 'Google', 'Google Maps', 'Uber', 'UberEats', and 'Youtube' for participants to tick. Results showed that the more participants chose utilitarian-use preferences, the higher willingness to accept privacy policies they would show. Thus the theories were well-tested by this field study.

## Chapter Six: Implications, Limitations, and Directions for future research

Limitations emerged from the nature and style of a field study. From the very beginning, the researcher chose to use field study as the experiment method to testify the consumers' willingness and the actual purchase behaviour toward their private data when they were set in the tangible goods consumption environment. This was designed as a way to operationalize a purchase behaviour in the physical world, receiving a tangible object in exchange for cash (which is more expected) and in exchange for data (which was hypothesized to be a more surprising form of exchange). In this case, the surprise of realizing data could be used in an exchange did not deter participants, but in fact perhaps functioned to gather their attention and curiosity. More than once, consumers expressed to the researcher that it felt like they got their new Marketing-branded USB flash drive "for free." Above all, it is possible this study documented a novelty effect instead of the effect of consumers treating their personal data as currency. This indicates that follow-up studies are needed to further test ideas about how consumers view the value and worth of their data when put up for exchange.

Field studies have key limitations. First, it is harder to control a study set in the field versus in a behaviour lab or run via an online panel. Though the researcher sought to test real behaviour, a decision was made early on to simply observe how many people were willing to purchase an object when sold via cash or sold via data. The goal was to capture a count of how many people (1) made a purchase, (2) approached the table but then decided not to make a purchase, and (3) passed by on the day. Though the researcher prepared a tally sheet and recruited help, it was difficult and at times overwhelming because of the central location and sheer volume of foot traffic to record much beyond the numbers of people who actually made a purchase. This left the researcher with less data than originally envisioned.

An alternate design was considered which would ask consumers to choose which method to pay each time they approached the table: Via (1) cash or (2) data. However, this set up a choice task that could have yielded different results as it introduced different constraints.

A larger limitation resulted from the use of cash only as the monetary currency condition. Cash has the highest pain of payment, and digital payment methods have the least pain of payment. The researcher did not have the resources during her master's to source an EFTPOS or bank card machine. This might have impacted results, as people tend to carry credit cards and phone apps as well as cash, and in some cases more often than cash. It is thus possible pain of payment serves as a confounding variable to this study.

One final limitation involved the scope of the study the researcher sought to run. Because it was designed as a fairly quick field study, the researcher did not want to tax a participant with payment (via either cash or data) plus 10 minutes on a survey questionnaire. Thus, considering the questionnaire length as one page of paper, the researcher limited it to a 3 minute, one page, single-sided study. The researcher thus could not set the questions to test the hypothesis 2b (in which the researcher sought to test if effect might be moderated by higher perception of communal orientation and the hypothesis 3 (this effect of currency type on purchase of tangible products will be moderated by the perception of exchange orientation)). Future research should investigate these clear questions about how consumers might vary in perceptions of the data they put up in exchange for access to desired goods and services.

Finally, what if a different object were chosen to be sold? What if the price were more commensurate with marketplace demand? The researcher carefully chose a functional object many students and workers carry with them, in a new card format with a logo. She set the

price low to be competitive with the bookstore across the quad. Would consumers willingly exchange more personal and private data, or data that comes at a higher cost, for the same object? Would the exchange be perceived differently by consumers if it were for a nice luxury handbag, or a t-shirt, or a massage? How does the product type and category impact?

To date, no other experimental studies exist, to the researchers' knowledge, investigating the consumers' consumption behaviour of using data as currency. Although a field study is not a new sort of research method, this research has already showed the potential to explore a trend for marketers and scholars to test the relationship between private data and consumers. This thesis compares different modes of currency and set different conditions to test consumers' real consumption behaviour, which did not happen in former studies. Consumers might consider their private data was valuable property but not rubbish, as the majority during this field study were happy to exchange it for a useful, utilitarian object. However, security issues could be a significant signal to gain more users in marketers standpoints.

Finally, implications and directions for future research will be discussed by the researcher.

## **6.1 Implications**

This research is aiming for identify consumer versus marketer insights into the value of private data via cash as currency or data as currency settings. Following from Yeung (2014), this study found that consumers might feel less pain of digital payment than traditional physical payment methods because of the user-friendly settings. Consumers might feel psychological ownership lost if they use cash as payment method (Kamleitner and Erki, 2013). The research result could explain this viewpoint because there were only 13.6% of participants chose cash as currency as purchasing the tangible good. The significant finding

was that a total 86.4% of participants chose data as currency to purchase the 8G flash drive. From the field study, the researcher believes that the main effect indicated that data as currency could be a new trend in real life consumption area which helps researchers to be aware that data payment methods could release consumers' pain of payment. In short, consumers appear more willing to exchange data for even tangible items they desire. And it seems to be that this is the case because the currency format is perceived as being less painful to pay with.

Although motivation conflicts exist, utilitarian and hedonic motivations drive consumers to share private data to gain service or goods from digital platforms (Martín-Consuegra et al., 2018). To test consumers' two main motivations, the questionnaire asked respondents to tick their motivations about using apps such as 'searching information' or 'playing games'. This experiment conducted in the researcher's university campus, it was reasonable that participants were willing to help a master's student to complete her research. The price of the flash drive was set lower than retailing price because this university allowed the author to encourage the participants' engagement under a fixed budget. Hence this phenomenon might trigger the participants' communal orientation instead of a commercial market orientation.

During the field experiments, the participants asked whether other sorts of payment methods could purchase the goods such as card payment or e-banking payment. It indicated that although this study only set two conditions, consumers' multiple payment methods needs were existing all the time. To be a commercial marketer, providing all kinds of payment methods could be a sound way to gain clients but not lose them because of the service limitations. This study set two conditions such as cash as currency and data as currency to purchase the tangible goods. The two conditions were conducted in turns while day 1 and day 3 allowed cash payment, the day 2 and day 4 allowed data as payment method. If the

researcher set the two conditions at the same time in each day, the main effects from this researcher might differ. This condition setting means that the prerequisite could bring the research different results.

The findings from this study could be valuable for researchers and marketers who are interested in the similar consumer behaviour in private data field. For consumers, they might gain more insight about their behaviour and motivation to use private data in exchange and improve their safety awareness about their use of personal data in real life. For marketers, they could get deeper insights from this work of how consumers value of their private data and utilize the findings to gain a better understanding of their consumers in a digital world. Furthermore, marketers might plan more effective marketing plans for meeting consumers' need and potential willingness to exchange their data for at least small utilitarian items.

The main effect showed that the participants were significantly willing to buy tangible goods via data as currency than using cash as currency. Marketers might consider digital payment methods could be more widely used in retailing sales segment. If the marketers were planning a promotion or campaign, data as currency might be a significant trial for attracting consumers' engagement. The other effects such as consumers' extent of digital engagement by conditions or overall analysis indicated that the more consumers tended to engage with the digital world, the higher willingness they would have to click "accept" or "agree" on privacy policies for apps. Marketers might realize that high-volume digital users could be the largest group of contributors in personal data. The motivations of private data sharing from consumers could be divided into utilitarian and hedonic reasons which would indicate that these motivations were highly related with their accepting privacy policy. Marketers could utilize the understanding of consumers' motivations to complete data and trust management systems that are key to their brand acceptance. And last, gender differences showed in

consumers' frequency of using smartphone payment. Marketers might consider the gender marketing tactic while they target mobile payment area.

## **6.2 Limitations**

There were several limitations existing in this study. Firstly, the hypothesis 2b (this effect will be moderated by higher perception of communal orientation) and the hypothesis 3 (this effect of currency type on purchase of tangible products will be moderated by the perception of exchange orientation) were not tested by this field study. For further study, scholars might design several experiments to test the moderator based on relationship marketing theory.

Secondly, the researcher mentioned about the theories about 'money as currency' via consumer insights into money in the literature review chapter. Although the study set cash as currency to be one of the condition settings, the other money forms such as card payment and e-payment were not set into the research. This study tested cash as the currency condition which only accepted paper cash and coins, thus future scholars could set credit card or debit card payment, and e-banking payment or mobile payment versus data as currency in the future. In data as currency condition, this study only test participants' contributing hashtagged photos as data currency. Further study could seek for other sorts of personal data. For example, private data can be user generated digital content and sharing of personal information from apps of mobile phone such as user message history.

Thirdly, the motivation of consumers' personal data sharing test were comparatively simple from this study. There were only seven listed activities and twelve apps for participants to select to relate their motivation for using and providing private data. If scholars would like to gain a deep insight about the motivation of consumers' personal data

sharing, they could find out more choices for participants to choose. Maybe open-ended questions could be used into the questions settings.

Fourthly, there were limited tests about consumers' insights of private data because that the researcher only designed one page questionnaire. Time-intensive and space-limited meant that the questionnaire could not accommodate too much information.

At last, demographic questions in this study were only mentioned age range and gender. If the researcher could ask more angles of questions about participants' other questions such as ethnicity, educational background, and user habits of using mobile phone, it will allow researchers to reach more information via the data analysis.

### **6.3 Future Directions**

This study was conducted in the city campus of Auckland University of Technology. It meant that the majority of participants were students or staff from university. For future research, a more public area than a tertiary school environment could be sought to gain more diverse of consumers' data. Online survey might be another way for pursuing a large number of population and wider range of data.

The research was aiming for gaining consumers' view about their private data. Further study could enlarge the questionnaire scale to gain a thorough view of participants' thoughts via qualitative insight. If scholars would like to observe consumers behaviour about their private data, they might use more complex settings which might cost more days and conditions. In addition, the consumers' communal or exchange orientation should be testified by researchers.

The researcher of this study set two conditions to test the consumers' willingness to purchase tangible goods. For further study, tangible goods or intangible goods should be

testified under different conditions to see the comparison among those settings. More forms of payment methods could be investigated by researchers too.

This study emphasized consumer behaviour when purchasing a tangible product. Future studies might be better to focus on a specific field such as e-shopping environment or social media platforms' consumption environment to gain in-depth insights of consumers' value and perceptions of their private data.

In conclusion, this thesis reviewed nearly 30 years literatures on consumers' insights of money such as money attitude, mode of payment and pain; consumers' insights of data such as private data disclosure, struggling among convenience vs. privacy and security concerns, trust, and motivations for private data sharing. On marketer's insights, the researcher review literature about the exchange theory, relationship marketing, and trust management. Following results from this study, significant evidence about several valuable differences in differences consumers' views about private data under cash or data as currency conditions emerged. Though prompting further study, this research offers the first evidence of consumers' perception and insights into how they view their private data as a currency for exchange.

## References

- Androulaki, E, Roeschlin, M, Scherer, T, Capkun, S, & Karame, G (2013). Evaluating user privacy in Bitcoin. In: Sadeghi AR. (eds) *Financial Cryptography and Data Security*. FC 2013. Lecture Notes in Computer Science, vol 7859. Springer, Berlin, Heidelberg, pp 34-51doi:10.1007/978-3-642-39884-1\_4
- Antoine, H. A. (2016). Hashtagging: what you need to know about hashtags as trademarks, hashtag litigation, the FTC, viral campaigns, and more. *The Computer & Internet Lawyer*, (11), 6.
- Bagozzi, R. P. (1974). Marketing as an Organized Behavioral System of Exchange. *Journal of Marketing*, 38(4), 77-81.
- Bagozzi, R. P. (1975). Marketing as exchange. *Journal of Marketing*, 39(4), 32-39.
- Bansal, G., Zahedi, F. M., & Gefen, D. (2016). Do context and personality matter? Trust and privacy concerns in disclosing private information online. *Information & Management*, 531-21. doi:10.1016/j.im.2015.08.001
- Batson,C.D (1993). Communal and Exchange Relationships: What is the Difference? Personality and Social Psychology Bulletin, 19(6), 677–683. <https://doi.org/10.1177/0146167293196002>.
- Bauman, A., & Bachmann, R. (2017). Online Consumer Trust: Trends in Research. *Journal of Technology Management & Innovation*, 12(2), 68-79.
- Biggart, I.W. & Delbride,R.(2004). System of exchange. *Academy of Management Review* 2004, Vol. 29, No. 1, 28–49.
- Bozic, B. (2017). Consumer trust repair: A critical literature review. *European Management Journal*, 35538-547. doi:10.1016/j.emj.2017.02.007
- Buunk, B., & Hoorens, V. (1992). Social support and stress: The role of social comparison and social exchange processes. *British Journal of Clinical Psychology*, 31(4), 445-457. doi:10.1111/j.2044-8260.1992.tb01018.x

- Calder, B.J., Philips, L.W. & Tybout, A.M. (1982). The Concept of External Validity. *Journal of Consumer Research*, Volume 9, Issue 3, 1 December 1982, Pages 240–244.
- Carruthers, B.G. & Espeland, W.N. (1998). Money, meaning, and morality. *The American Behavioral Scientist* ;41, 10; pg. 1384.
- Chamlertwat, W., Bhattarakosol, P., Rungkasiri, T., & Haruechaiyasak, C. (2012). Discovering Consumer Insight from Twitter via Sentiment Analysis. *Journal of Universal Computer Science*, 18(8):973-99
- Chao, L., Yang Li, D., Miklau, G., & Suciu, D. (2017). A Theory of Pricing Private Data. *Communications of The ACM*, 60(12), 79-86. doi:10.1145/3139457
- Chatterjee, P., & Rose, R. L. (2012). Do Payment Mechanisms Change the Way Consumers Perceive Products? *Journal of Consumer Research*, 38(6), 1129-1139.
- Cheung, C. M. K., Chiu, P.-Y., & Lee, M. K. O. (2011). Online social networks: Why do students use Facebook? *Computers in Human Behavior*, 27, 1337 – 1343.
- Chin, E., Felt, A.P. & Sekary, V., Wagner, D. (2012). Measuring User Confidence in Smartphone Security and Privacy. Symposium on Usable Privacy and Security (SOUPS) 2012, July 11-13, 2012, Washington, DC, USA
- Clark, M. S. & Mills, J (1979). Interpersonal Attraction in Exchange and Communal Relationships. *Journal of Personality and Social Psychology*, Vol. 37, No. 1, 12-24
- Clark, M. S., & Waddell, B. (1985). Perceptions of Exploitation in Communal and Exchange Relationships. *Journal of Social and Personal Relationships*, 2(4), 403–418.
- <https://doi.org/10.1177/0265407585024002> Clark, M. S., & Mills, J. (1993). The Difference between Communal and Exchange Relationships: What it is and is Not. *Personality and Social Psychology Bulletin*, 19(6), 684–691. <https://doi.org/10.1177/0146167293196003> Cropanzano, R. & Mitchell M.S.

(2005). Social exchange theory: An interdisciplinary review. (n.d). *Journal of Management*, 31(6), 874-900.

Dahlberg, T., Guo, J., & Ondrus, J. (2015). A critical review of mobile payment research. *Electronic Commerce Research And Applications*, 14 (Contemporary Research on Payments and Cards in the Global Fintech Revolution), 265-284. doi:10.1016/j.elerap.2015.07.006

Dimitriu, R., & Guesalaga, R. (2017). Consumers' Social Media Brand Behaviors: Uncovering Underlying Motivators and Deriving Meaningful Consumer Segments. *Psychology & Marketing*, 34(5), 580-592. doi:10.1002/mar.21007

Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing Buyer-Seller Relationships. *Journal of Marketing*, 51(2), 11-27.

Erevelles, S., Fukawa, N., & Swayne, L. (2016). Big Data consumer analytics and the transformation of marketing. *Journal of Business Research*, 69897-904. doi:10.1016/j.jbusres.2015.07.001

Falk, T., Kunz, W. H., Schepers, J. J., & Mrozek, A. J. (2016). How mobile payment influences the overall store price image. *Journal of Business Research*, 692417-2423. doi:10.1016/j.jbusres.2016.01.011

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics*. Sage Publications Ltd.2013.

F. Robert Dwyer, Paul H. Schurr, & Sejo Oh (1987). Developing Buyer-Seller Relationships. *Journal of Marketing*, (2), 11. doi:10.2307/1251126

Franklin S. Houston, & Jule B. Gassenheimer (1987). Marketing and Exchange. *Journal of Marketing*, (4), 3. doi:10.2307/1251244

Frazier, G. L. (1983). Interorganizational Exchange Behavior in Marketing Channels: A Broadened Perspective. *Journal of Marketing*, 47(4), 68-78.

Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35137-144. doi:10.1016/j.ijinfomgt.2014.10.007

George, G., Haas, M & Pentland, A,S (2014). From The Editors Big Data and Management, *Academy of Management Journal*, Vol. 57, No. 2, 321–326.

Ghazizadeh,E., Manan, Ab.J., Zamani, J.& Pashang,A.(2012). A survey on security issues of federated identity in the cloud computing. (2012). *Cloud Computing Technology and Science* , IEEE 4th International Conference on,532. doi:10.1109/CloudCom.2012.6427513

Glaser, F., Zimmermann, K., Haferkorn,M. & Weber, M.C. (2014). Bitcoin - Asset or currency? Revealing users' hidden intentions. *Twenty Second European Conference on Information Systems*

Graeff, T.R. & Harmon, S.(2002) "Collecting and using personal data: consumers' awareness and concerns," *Journal of Consumer Marketing*, Vol. 19 Issue: 4, pp.302-318

Grinberg, R. (2011). Bitcoin: An Innovative Alternative Digital Currency. *Hastings Science & Technology Law Journal*, Vol. 4, p.160

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis*. Edinburgh Gate, Harlow, Essex: Pearson Education, 2014.

Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of The Association For Information Science & Technology*, 67(9), 2047-2059. doi:10.1002/asi.23552.

Hansen & Levin (2016).The effect of apathetic motivation on employees' intentions to use social media for businesses. *Journal of Business Research*.69 (2016) 6058–6066

Hansen, J., Kutzner, F., & Wanke, M. (2013). Money and Thinking: Reminders of Money Trigger Abstract Construal and Shape Consumer Judgments. *Journal of Consumer Research*, 39(6), 1154-1166. doi:10.1086/667691

Hirschman, E. C. (1979). Differences in Consumer Purchase Behavior by Credit Card Payment System. *Journal of Consumer Research*, 6(1), 58-66.

Hirschman, E. C. (1987). People as Products: Analysis of a Complex Marketing Exchange. *Journal of Marketing*, 51(1), 98-108.

- Hopkins, W.G (2008). Quantitative Research Design. *Sport Science* 4(1).  
<http://sportsci.org/jour/0001/wghdesign.html>
- James, T. L., Warkentin, M., & Collignon, S. E. (2015). A dual privacy decision model for online social networks. *Information & Management*, 52893-908. doi:10.1016/j.im.2015.07.010
- Jayawardhena, C. (2004) "Personal values' influence on e-shopping attitude and behaviour", *Internet Research*, Vol. 14 Issue: 2, pp.127-138
- Kamleitner, B., & Erki, B. (2013). Payment method and perceptions of ownership. *Marketing Letters*, 24(1), 57-69. doi:10.1007/s11002-012-9203-4
- Kapitan, S., & Silvera, D. (2016). From digital media influencers to celebrity endorsers: attributions drive endorser effectiveness. *Marketing Letters*, 27(3), 553–567.
- Khamis, S., Ang, L., & Welling, R. (2017). Self-branding, ‘micro-celebrity’ and the rise of social media influencers. *Celebrity Studies*, 8(2), 191—208.
- Kim, E., & Drumwright, M. (2016). Engaging consumers and building relationships in social media: How social relatedness influences intrinsic vs. extrinsic consumer motivation. *Computers In Human Behavior*, 63970-979.
- Kim, S., & Eastin, M. S. (2011). Hedonic Tendencies and the Online Consumer: An Investigation of the Online Shopping Process. *Journal of Internet Commerce*, 10(1), 68-90.  
doi:10.1080/15332861.2011.558458
- Kim, Y., & Peterson, R. A. (2017). A Meta-analysis of Online Trust Relationships in E-commerce. *Journal of Interactive Marketing*, 3844-54. doi:10.1016/j.intmar.2017.01.001
- Kilroy, D. (2018). How to Run a Successful UGC Hashtag Contest. *Social media today.com*.  
<https://www.socialmediatoday.com/news/how-to-run-a-successful-ugc-hashtag-contest/517030/>
- Kiyotaki, N., & Wright, R. (1989). On Money as a Medium of Exchange. *Journal of Political Economy*, 97(4), 927.

- Kotler, P. (1972). A Generic Concept of Marketing. *Journal of Marketing*, 36(2), 46-54.
- Kshetri N (2014). Big data's impact on privacy, security and consumer welfare. *Telecommunication Policy*, 38(11), 1134-1145.
- Laestadius, L. I., & Wahl, M. M. (2017). Mobilizing social media users to become advertisers: Corporate hashtag campaigns as a public health concern. *Digital Health*, 3, 2055207617710802.
- Lambe, C. J., Wittmann, C. M., & Spekman, R. E. (2001). Social Exchange Theory and Research on Business-to-Business Relational Exchange. *Journal of Business-To-Business Marketing*, 8(3), 1.
- Lambrecht, A & Misra, K (2016). Fee or Free: When Should Firms Charge for Online Content? *Management Science*
- Langenderfer, J., & Miyazaki, A. D. (2009). Privacy in the Information Economy. *Journal Of Consumer Affairs*, 43(3), 380-388. doi:10.1111/j.1745-6606.2009.01152.x
- León, F. J., A Noguera, J., & Tena-Sánchez, J. (2012). How much would you like to pay? Trust, reciprocity and prosocial motivations in El trato. *Social Science Information*, 51(3), 389–417. <https://doi.org/10.1177/0539018412441756>
- Levitt, T (1981). Marketing Intangible Products and Product Intangibles. *Harvard Business Review*. <https://hbr.org/1981/05/marketing-intangible-products-and-product-intangibles>
- Levitin, A. V., & Redman, T. C. (1998). Data as a Resource: Properties, Implications, and Prescriptions. *Sloan Management Review*, 40(1), 89-101.
- Lie, C., Hunt, M., Peters, H. L., Velu, B., & Harper, D. (2010). The “Negative” Credit Card Effect: Credit cards as spending-limiting stimuli in New Zealand. *Psychological Record*, 60(3), 399-411.
- Liettaer, B (2001 ). *The Future of Money: Creating New Wealth, Work and a Wiser World*. London, England: Random House

- Lin, H., Bruning, P. F., & Swarna, H. (2018). Using online opinion leaders to promote the hedonic and utilitarian value of products and services. *Business Horizons*, 61, 431-442.  
doi:10.1016/j.bushor.2018.01.010
- Lunt, P. (1994). What Asians like and dislike about banks. *ABA Banking Journal*, 86(7), 62.
- Luo, X. (2002). Trust production and privacy concerns on the Internet. A framework based on relationship marketing and social exchange theory. *Industrial Marketing Management*, 31, 111-118.  
doi:10.1016/S0019-8501(01)00182-1
- Malhotra, N. K. (2010). *Marketing research : an applied orientation*. Boston : Prentice Hall, [2010].
- Mäntymäki, M & Salo, J. (2014). Why do teens spend real money in virtual worlds? A consumption values and developmental psychology perspective on virtual consumption. *International Journal of Information Management*. 35 (2015) 124–134
- Martín-Consuegra, D., Díaz, E., Gómez, M., & Molina, A. (2018). Examining consumer luxury brand-related behavior intentions in a social media context: The moderating role of hedonic and utilitarian motivations. *Physiology & Behavior*, doi:10.1016/j.physbeh.2018.03.028
- Mills & Clark (1994). Communal and exchange relationships: controversies and research. *Theoretical Frameworks for Personal Relationships*. (pp.14). New York: Psychology Press.
- Mayer-Schonberger, V., & Cukier, K. (2013). Big Data: A Revolution That Will Transform How We Live, Work, and Think. *Smart Business Cincinnati/Northern Kentucky*, 9(6), 19.
- McCall, M., Trombetta, J., & Gipe, A. (2004). *Psychological Reports*, 95, 331-337.
- Milanova, V., & Maas, P. (2017). Sharing intangibles: Uncovering individual motives for engagement in a sharing service setting. *Journal of Business Research*, 75, 159-171.  
doi:10.1016/j.jbusres.2017.02.002
- Mises, L. V. (1971). The theory of money and credit. Trans. H. E. Batson. 2nd ed. Irvington-on-Hudson, NY: Foundation for Economic Education.

Mitchell, T. R., & Mickel, A. E. (1999). The meaning of money: An individual difference perspective. *Academy of Management Review*, 24(3), 568-578.

doi:10.5465/AMR.1999.2202138

Möller, K., & Halinen, A. (2000). Relationship Marketing Theory: Its Roots and Direction. *Journal of Marketing Management*, 16(1-3), 29-54

Moore, A., & Taylor, M. (2011). Time to Cut Up Those Debit Cards? Effect of Payment Mode on Willingness to Spend. *Journal of Consumer Policy*, 34(4), 415-422. doi:10.1007/s10603-011-9172-7

Nisar, T.M. & Prabhakar, G. (2017). What factors determine e-satisfaction and consumer spending in e-commerce retailing? *Journal of Retailing and Consumer Services* 39 (2017) 135–144.

O'Brien, H. L. (2010). The influence of hedonic and utilitarian motivations on user engagement: The case of online shopping experiences. *Interacting With Computers*, 22, 344-352.

doi:10.1016/j.intcom.2010.04.001

Parra-Arnau, J. (2018). Optimized, direct sale of privacy in personal data marketplaces. *Information Sciences*, 424354-384. doi:10.1016/j.ins.2017.10.009

Persaud (2012). Field Study. *Encyclopedia of Research Design*. Thousand Oaks.

SAGE Publications Inc. 2012.

Prelec, D., & Simester, D. (2001). Always Leave Home Without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay. *Marketing Letters*, 12(1), 5-12.

doi:10.1023/A:1008196717017

Prince, C. (2018). Do consumers want to control their personal data? Empirical evidence.

*International Journal of Human - Computer Studies*, 11021-32. doi:10.1016/j.ijhcs.2017.10.003

Poon, W-C (2007) "Users' adoption of e - banking services: the Malaysian perspective", *Journal of Business & Industrial Marketing*, Vol. 23 Issue: 1, pp.59-69,

<https://doi.org/10.1108/08858620810841498>

- Qu Y., Rong W., Ouyang Y., Chen H., Xiong Z. (2015) Social Aware Mobile Payment Service Popularity Analysis: The Case of WeChat Payment in China. *Advances in Services Computing*. Lecture Notes in Computer Science, vol 9464. Springer, Cham
- Raghubir, P. (2017). To Get People to Pay, Understand How They Think. *IESE Insight*, (34), 46-52. doi:10.15581/002.ART-3055
- Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and Spendthrifts. *Journal of Consumer Research*, 34(6), 767-782.
- Roberts, J. A., & Jones, E. (2001). Money Attitudes, Credit Card Use, and Compulsive Buying among American College Students. *Journal of Consumer Affairs*, 35(2), 213-240.
- Sagiroglu, S., & Sinanc, D (2013). Big Data: A Review. 2013 International Conference on Collaboration Technologies and Systems (CTS), Collaboration Technologies and Systems (CTS), 42. doi:10.1109/CTS.2013.6567202
- Scott, M. L., Mende, M., & Bolton, L. E. (2013). Judging the Book by Its Cover? How Consumers Decode Conspicuous Consumption Cues in Buyer-Seller Relationships. *Journal of Marketing Research*, 50(3), 334-347. doi:10.1509/jmr.11.0478
- Song, D., Shi, E., Fischer, I. & Shankar, U. (2012). Cloud Data Protection for the Masses. (2012). *Computer*, (1), 39. doi:10.1109/MC.2012.1
- Stephen, A. T. (2016). The role of digital and social media marketing in consumer behavior. *Current Opinion in Psychology*, 10 (Consumer behavior), 17-21.
- Vargo, S.L., Lusch, R.F. (2007). From goods to service(s): Divergences and convergences of logics. *Industrial Marketing Management* 37 (2008) 254–259.
- Vanyperen, N. W., & Buunk, B. P. (1991). Equity Theory and Exchange and Communal Orientation From a Cross-National Perspective. *Journal of Social Psychology*, 131(1), 5-20.

- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, (1), 157.
- Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The Psychological Consequences of Money. *Science*, (5802), 1154. doi:10.1126/science.1132491
- Walker, K. L. (2016). Surrendering Information Through the Looking Glass: Transparency, Trust, and Protection. *Journal of Public Policy & Marketing*, 35(1), 144-158. doi:10.1509/jppm.15.020
- Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. *Journal of Business Research*, 70356-365. doi:10.1016/j.jbusres.2016.08.009
- Weinberg, B. D., Milne, G. R., Andonova, Y. G., & Hajjat, F. M. (2015). Internet of Things: Convenience vs. privacy and secrecy. *Business Horizons*, 58 615-624. doi:10.1016/j.bushor.2015.06.005
- Wernimont, P. F. & Fitzpatrick, S. (1972). The meaning of money. *Journal of Psychology*. Vol. 56, No. 3, 218-226.
- Xu, X., Ma, W. W., & See-To, E. W. (2010). Will Mobile Video Become the Killer Application for 3G Mobile Internet? A Model of Media Convergence Acceptance. *Information Systems Frontiers* (12:3), pp. 311-322.
- Yan, Z., Zhang, P., & Vasilakos, A. V. (2014). A survey on trust management for Internet of Things. *Journal of Network And Computer Applications*, 42120-134. doi:10.1016/j.jnca.2014.01.014
- Yeung, K. L. (2014). Exploring the origin of pain of payment in cash and its relevance to computer payment interface. *Graduate Theses and Dissertations*. 14018.
- Zeithaml, V. A. (1981). How consumer evaluation processes differ between goods and services. *Conference: American Marketing Association First Services Marketing Conference*

Zhang, DY, Feng, X, & Chen, P.(2018). Examining microbloggers' individual differences in motivation for social media use. *Social Behavior & Personality: An International Journal*, 46(4), 667-682.

Zhou, X., Vohs,K.D.,& Baumeister, R.F. (2009). The Symbolic Power of Money: Reminders of Money Alter Social Distress and Physical Pain. *Psychological Science*, (6), 700.

Zhu, H. (2016). Searchable talk as discourse practice on the internet: The case of “pass:[#]bindersfullofwomen.” *Discourse, Context and Media*, 12, 87–98.

## Appendix-1 Questionnaire

### Response Survey



Thanks for approaching our selling table! I am selling these products as part of a student master's thesis here at AUT. Can you please answer a few quick questions below?

#### 1. Do you own a smartphone?

☐ Yes ☐ No

#### 2. What activities do you typically use your smartphone for? Please check all that apply.

<input type="checkbox"/> Making phone calls	<input type="checkbox"/> Twitter	<input type="checkbox"/> Facebook
<input type="checkbox"/> Texting family and/or friends	<input type="checkbox"/> Instagram	<input type="checkbox"/> Snapchat
<input type="checkbox"/> Using social media	<input type="checkbox"/> Weibo	<input type="checkbox"/> WeChat
<input type="checkbox"/> Watching videos	<input type="checkbox"/> What'sApp	<input type="checkbox"/> Google Maps
<input type="checkbox"/> Playing games	<input type="checkbox"/> Uber	<input type="checkbox"/> UberEats
<input type="checkbox"/> Shopping	<input type="checkbox"/> Youtube	<input type="checkbox"/> Google
<input type="checkbox"/> Searching information	<input type="checkbox"/> _____	

#### 3. How much data per month do you tend to use on your smartphone? Select

☐ 500MB ☐ 1GB ☐ 2GB ☐ 3GB ☐ 4GB ☐ 5GB ☐ Over 5GB ☐ Not sure

#### 4. Have you ever made a payment of some form on your smartphone?

☐ Yes ☐ No

#### 5. How often do you make payments via your smartphone?

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### 6. What is your preferred payment mechanism?

☐ Cash ☐ Check ☐ Debit/Credit card ☐ E-banking(online/mobile)

#### 7. Do you tend to accept privacy policies when you download apps to your smartphone and/or electronic devices?

☐ Yes ☐ No

#### 8. Some app developers collect and use your data to create a better service experience. How willing are you to click "accept" or "agree" to allow apps to use your data in this way?

1	2	3	4	5	6	7
Not at all willing	Very little willing	Somewhat willing	Neutral	Considerably willing	Much willing	Very much willing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Age ☐ 18-25 ☐ 26-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ Over 65

Gender ☐ Male ☐ Female

# **Appendix-2 Participant Information Sheet**

## **Participant Information Sheet**

### **Date Information Sheet Produced:**

13 June 2018

### **Project Title**

Data as currency: Consumer vs. marketer insights into the value of private data

### **An Invitation**

Hi, I am Claire, postgraduate student of Auckland University of Technology, my major is Marketing. My experiment is going to identify that whether people are willing to use their private data to buy tangible goods. Participation in this research is voluntary, and you may withdraw at any time prior to the completion of data collection by exiting this online survey. Up until final submission of survey, any exited survey will not be used. After you submit the final page of the survey, however, you give researchers permission to use your responses and any collected data in a study. Your choice to participate or not participate will not affect any potential relationship with Auckland University of Technology and will neither advantage nor disadvantage you.

### **What is the purpose of this research?**

Asking consumers to purchase a tangible product using either money or data.

### **How was I identified and why am I being invited to participate in this research?**

We are recruiting students, teachers, and anyone who pass by the table we organized.

### **How do I agree to participate in this research?**

To agree, click on "I agree" below and proceed to the survey questions. Completing the questionnaire indicates your consent.

### **What will happen in this research?**

In this research, you will encounter two scenarios. Firstly, we sale USB flash disk with the payment condition of money or data if you want to purchase the USB flash disk. Alternately, we might ask for your responses to a few personality scales, and ask you to fill up a questionnaire as sharing private data to exchange the USB flash disk. You would be asked to complete all survey questions in one sitting, compromising approximately 10 minutes.

### **What are the discomforts and risks?**

There will be no more than minimal risks or discomforts associated with the procedures to be followed. If you feel uncomfortable about any procedure, you are free to stop and exit the survey at any time. However, your responses are all anonymous.

### **How will these discomforts and risks be alleviated?**

Provide a full, and friendly, description. If you have decided to make counselling or other support opportunities available, please provide the contact details and terms for the counselling service or services to which you are referring the participants. If this will be AUT Health, Counselling and Wellbeing, then you will need to include the following wording:

AUT Health Counselling and Wellbeing is able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research, and are not for other general counselling needs. To access these services, you will need to:

- drop into our centres at WB219 or AS104 or phone 921 9992 City Campus or 921 9998 North Shore campus to make an appointment. Appointments for South Campus can be made by calling 921 9992
- let the receptionist know that you are a research participant, and provide the title of my research and my name and contact details as given in this Information Sheet

You can find out more information about AUT counsellors and counselling on <http://www.aut.ac.nz/being-a-student/current-postgraduates/your-health-and-wellbeing/counselling>.

### **What are the benefits?**

The findings of this research are intended to benefit marketing literature and practitioners and consumers alike in understanding how data as currency might play a role in consumer purchase decision making.

### **How will my privacy be protected?**

Your responses to this academic research are anonymous; anonymity means that the researcher does not know who the participant is.

### **What are the costs of participating in this research?**

We anticipate that you will be in this research study for less than 15 minutes.

### **What opportunity do I have to consider this invitation?**

You will have 7 days before we post the information online.

### **Will I receive feedback on the results of this research?**

At the end of this survey, there is a link listed where results will be published.

### **What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Sommer Kapitan, [skapitan@aut.ac.nz](mailto:skapitan@aut.ac.nz), +64 09 921 9999 ext 5131. Concerns regarding the conduct of the research should be notified to the Executive Secretary of ATEC, Kate O' Connor, [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz), 921 9999 ext 6038.

### **Whom do I contact for further information about this research?**

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

#### ***Researcher Contact Details:***

Chao Xu email:[clairex2017@gmail.com](mailto:clairex2017@gmail.com)

#### ***Project Supervisor Contact Details:***

Sommer Kapitan, [skapitan@aut.ac.nz](mailto:skapitan@aut.ac.nz), +64 09 921 9999 ext 5131.

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, ATEC  
Reference number *type the reference number*.

# Appendix-3 Ethics Application Approval

## Auckland University of Technology Ethics Committee (AUTEC)

### Ethics Application Approval 18/273

Auckland University of Technology  
D-88, Private Bag 92006, Auckland 1142, NZ  
T: +64 9 921 9999 ext. 8316  
E: [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)  
[www.aut.ac.nz/researchethics](http://www.aut.ac.nz/researchethics)

12 July 2018

Sommer Kapitan  
Faculty of Business Economics and Law

Dear Sommer

Ethics Application: 18/273 **Data as currency: Consumer vs. marketer insights into the value of private data**

I wish to advise you that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) has **approved** your ethics application.

This approval is for three years, expiring 10 July 2021.

#### Non-Standard Conditions of Approval

1. Remove the legacy help text on the Information Sheet, and the offer of counselling.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by AUTEC before commencing your study.

#### Standard Conditions of Approval

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through <http://www.aut.ac.nz/research/researchethics>.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through <http://www.aut.ac.nz/research/researchethics>.
3. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form: <http://www.aut.ac.nz/research/researchethics>.
4. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTEC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. You are reminded that it is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

For any enquiries please contact [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)

Yours sincerely,



Kate O'Connor  
Executive Manager  
Auckland University of Technology Ethics Committee

Cc: [clairex2017@gmail.com](mailto:clairex2017@gmail.com)