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Small Project Report

Contactless & Cashless: Post Covid Consumption

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About PIN

The Productivity Insights Network was established in January 2018 and is funded by the Economic and Social Research Council. As a multi-disciplinary network of social science researchers engaged with public, private, and third sector partners, our aim is to change the tone of the productivity debate in theory and practice. It is led by the University of Sheffield, with co-investigators at Cambridge Econometrics, Cardiff University, Durham University, University of Sunderland, SQW, University of Cambridge, University of Essex, University of Glasgow, University of Leeds and University of Stirling. The support of the funder is acknowledged. The views expressed in this report are those of the authors and do not necessarily represent those of the funders.

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1. Introduction

Accompanying the Covid-19 driven reduction in physical economic and social activity has been a societal shift to online economic activity (Beaunoyer et al., 2020; Mills et al., 2021). This COVID-19 driven explosion in replacing the physical with the digital (Hantrais et al., 2020) has led to a digital by default economy and, at least for the present, a digital by default society. Education, socialising and many health, welfare and societal services are now (often only) provided online (Budd et al., 2020; Fairlie & Loyalka, 2020; Fairlie et al., 2020; Hacker et al., 2020; Xie et al., 2020). As per (Beaunoyer et al., 2020) the digital sphere is switching from an amenity to a necessity. In the COVID-19 pandemic, digital technologies have become the nexus of economic activity and the facilitator of social interactions (Nguyen et al., 2021). As we exit lockdowns and begin a move from wholly online consumption to consumption again located in the physical realm, business models have evolved. In particular we note a merging of the digital and physical. These hybrid business models have two characteristics:

1. They have replaced (at least some of) their services with mobile phone applications.
2. They have switched to a low cash or entirely cashless payment mechanism.

Both of these characteristics rely on electronic payment mechanisms. Typically mobile phone applications have replaced ordering and payment functions and cashless stores rely on Chip and Pin or contactless card payments, or NFC device payments such as ApplePay, GooglePay or Banking Applications.

Whilst the chancellor at least implicitly considers that making it easier to pay will provide a boost to businesses:

"*As we begin to open the UK economy and people return to the high street, the contactless limit increase will make it easier than ever before for people to pay for their shopping, providing a welcome boost to retail that will protect jobs and drive growth across the capital*." (Sunak 2021)[1]

With Policy believing easier payments will give a 'shot in the arm' to retail[2]. However how consumers *actually* respond to a cashless world is less clear. This response is key to understanding the longer term implications of a move to cashless business and for business to effectively plan and construct their operating models.

Understandably, there is little consensus on the effects of a rapid societal move toward cashless payments in the context of a pandemic, however we can glean insight and understanding from numerous published works as well as social media commentary.

This report is structured as follows. In the following section we present an overview of an extensive systematic search process which aims to identify and isolate the effect of cashless payments on the consumer. In section 3 we discuss some trending social media opinion and sentiment regarding cashless payments in the UK during the initial lockdown period. In section 4 we discuss evolving hybrid business models including some lessons learned. After this we conclude.

[1] https://www.theguardian.com/money/2021/mar/03/uk-contactless-payment-limit-rise-rishi-sunak-budget
[2] https://www.standard.co.uk/news/uk/contactless-payment-limit-raised-100-pounds-budget-rishi-sunak-b921903.html

2. The Cashless Consumer – Evidence Review

The retail and hospitality sectors have a long history in remaining bricks-and-mortar businesses with contact-intensive services and much reliance on cash for transactions with customers. However, the recent dynamic development of digital transformation has led to cashless transactions through which customers have options to opt for purchases with digital payments (e.g., credit and debit cards, digital wallets) at the expense of cash payments in such physical businesses.[3] In particular, many highly digitised countries in Europe have increasingly promote cashless payments especially during 2020 when cash transactions pose challenges due to Covid-19 transition throughout the pandemic. (UK Finance, 2021) finds that the number of contactless card payments made in the UK increased by 12 percent during 2020 in which cash payments were reduced by 35 percent after a gradual 15 percent decline since 2017. (Negreiro, 2020) emphasises that Sweden has a markedly low degree of traditional cash payments which accounted for nearly 2 percent of total payments value in 2018 and digital payments via cards or apps have become widely accepted by retailers and favourably used by young consumers.

Much of the behavioural science literature offers compelling explanations of the biases, heuristics and psychology of money which underpin the effects discussed in this section. We do not recount these here. Mills *et al* (2021) explain these in relation to pandemic prompted online consumption.

Such digital shift toward increased cashless payments in retailers is linked with perceived benefits for both retail businesses and consumers. For retail businesses, major benefits of moving away from cash are reduced labour costs incurred from preparing or taking paper bank deposits into the bank account of the business or store merchant, better accounting and auditing, lower risk of crime. This is because the digital payments are all cleared online at the point of sale, resulting in zero hours of cashing up, accounting otherwise cash and reconciling the register drawer, no transaction costs involved for transporting cash to a local bank, and reduced check losses. For an example of benefits of card payment used in grocery stores, see (Garcia-Swartz et al., 2006) which provide an extensive literature on benefits of payment instruments under the cost-benefit framework using a Food Marketing Institute 1998 cost study, or see (Chattopadhyay et al., 2018) for an example of Indian small retail businesses. The perceived benefits for consumers, which are also quantified in (Garcia-Swartz et al., 2006) for grocery purchases, further emphasised by (Bátiz-Lazo et al., 2014) for broader retailers and by (Ozturk, 2016) for the hospitality sector, are manifold: record keeping purposes for similar small, spontaneous purchases that used to be made by cash; diverse spending tools such as rewards with credit cardholders or options to borrow through credit cards payments; efficient and speedy transactions made by automation.

However, the degree of going cashless is not the same globally, nationally, and regionally. (Negreiro, 2020) find that 80 percent of point-of-sale transactions in Europe are made in cash

[3] See the analysis by Negreiro, M. (2020). *The rise of e-commerce and the cashless society*. https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/649341/EPRS_BRI(2020)649341_EN.pdf on the transition from cash to cashless payments in retailers for a set of European countries; Rahman, M., Ismail, I., & Bahri, S. (2020). Analysing consumer adoption of cashless payment in Malaysia. *Digital Business*, *1*(1), 100004. https://doi.org/https://doi.org/10.1016/j.digbus.2021.100004 for an Asian developing country Malaysia; Wisniewski, T. P., Polasik, M., Kotkowski, R., & Moro, A. (2021). *Switching from Cash to Cashless Payments during the COVID-19 Pandemic and Beyond* https://ssrn.com/abstract=3794790 and Świecka, B., Terefenko, P., & Paprotny, D. (2021). Transaction factors' influence on the choice of payment by Polish consumers. *Journal of Retailing and Consumer Services*, *58*, 102264. https://doi.org/https://doi.org/10.1016/j.jretconser.2020.102264 for an example of Poland, among others.

and that in a highly digitised country as Sweden, the demographic of consumers matters in the sense that digital wallets are more dominantly used by young affluent consumers and groups of older people are excluded from the transition to cashless society.

2.1: A systematic overview of the literature

We interrogate the Business Source Premier database for literature containing the words:

Consumer AND cashless	Customer AND cashless	Consumer AND digital payments
Customer AND digital payments	Consumer AND contactless	Customer AND contactless
Retail AND cashless	Retail AND digital payments	Retail AND contactless
Contactless AND payments	Cashless AND payments	Business AND contactless
Business AND cashless		

We constrain our results to academic peer reviewed publications and to the timeframe 2010-2021. We filter our results based on relevance to our research aim and those that are relevant to a post Covid economy. Due to the scarcity of literature in this area we do not filter on geography, but limit our interpretation of this literature to effects which may be relevant to the UK economy. We – in a small number of cases – were also limited by availability of seemingly relevant articles. We conduct our analysis below on 71 articles[4].

The shift toward cashlessness in the banking system has changed the consumers' preference toward cash. Table A shows the extent to which consumers' shopping behaviour toward cash changes given the payment methods and shopping platforms. Consumers used to be familiar with offline shopping platform such as retail bricks-and-mortar stores or merchants' point of sale, but now they have an additional choice of online shopping platforms (e-commerce or mobile commerce) to conduct transactions online. Online platforms and technological advances allow consumers to have a variety of cashless or digital payment methods with the longest existence of electronic cards (e.g., credit, debit cards), and the recent rise of mobile payments (also known as e-wallet payments).

A. Shopping platforms

It appears that for both online and offline platforms, there is a pronounced shift toward cashless payments in consumers' shopping behaviour with global evidence. In general, consumers have better, improved shopping experience with their genuine adoption of different cashless payment methods, leading to an increase in consumer spending.

- Recent empirical research on **offline shopping platform** has shown that the shift toward cashless payments of consumers depends on both consumers and retailers.

First, consumer response to payment methods available is worth exploring. (Borzekowski & Kiser, 2008) investigate consumers response to payment methods at check-out in merchants that do and those do not accept credit cards. The preference toward contactless debit over credit card, cash or cheque payments. (Agarwal et al., 2019) use data on bank cards and

[4] We present this analysis in the Appendix as Table A.

mobile wallet transactions from Singapore consumers shows that QR code payments lead to usage increase, especially in small and new merchants[5].
Second, the consumers' adoption of digital payments is much dependent on retailers' potential benefits (Adhikary et al., 2021; Bounie & Camara, 2020), and their organisational, operational impacts (Nisbet, 2009; van der Cruijsen & Plooij, 2018). (Adhikary et al., 2021) find that adaptation of both card-based and app-based payments results in a synergistic effect on the retailers' revenue of unorganised retailers in emerging markets, while (Bounie & Camara, 2020) find higher card-sales for small merchants in France from adoption of contactless payments. (Nisbet, 2009) stress the importance of employees' role and responsibilities in introducing cashless card payments for consumers, and (van der Cruijsen & Plooij, 2018) find that consumers' payment behaviour depends on point-of-sale types (food, non-food, gas, car park, etc.) and safety.

- The rise of **online shopping platforms** including e-commerce and m-commerce promotes more shopping experience for consumers through more search activities, product evaluation than offline shopping. Most recent studies find the consumers increase intention of adopting digital payment methods in their online shopping experience (See evidence in (Batista & Vicente, 2020; Park et al., 2020; Shareef et al., 2018; Sharma et al., 2018; Zhang et al., 2020)). However, the impact of online platforms on consumer actual spending has rather mixed evidence. (Agarwal et al., 2019) and (Zhang et al., 2020) show that consumers increase consumer spending through digital products during the diffusion of e-financial products and big data analytics capabilities, while (Aggarwal et al., 2020) show that consumers open mobile accounts to save more than to make transfers and expenditures.
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B. Payment methods

However, the trend of using different cashless or **digital payment** methods in both offline and online platforms through rapid development of new technologies has raised concerns over fraud, risk involved, which affects consumers' perception in effective adoption and usage of these payments[6]. Consumer usage intention of digital payment methods can be influenced by many factors: their habit and satisfaction (Karjaluoto et al., 2020); technology savvy (Shareef et al., 2018; Sharma et al., 2018); financial knowledge (Świecka et al., 2021); convenience and efficiency of payment methods (Tan, 2021); trust and security (Taylor, 2016); government policy and consumer law protection (Garratt & van Oordt, 2021); geographical locations (Park et al., 2020).[7]

1. Electronic cards

In recent empirical research on the usage of **electronic cards**, most studies identify consumers' preference for usage of electronic cards in that consumers have below-cost services (lower payment processing time, no transaction fee) and loyalty rewards compared to cash payments (Garcia-Swartz et al., 2006; Milkau, 2020), or they can control and keep track of expenditures better than cash (Szmigin & Foxall, 1999). The actual spending via card payments, however, depends on consumers' income. (Greenacre & Akbar, 2019) find that the actual spending via cards of low-income consumers is at a lower rate than of other consumers

[5] Brown, G., & Whittle, R. (2020) link the psychology of money to spending and FinTech
[6] Lupton *et al* (2015) provide an overview of biases and heuristics related to income.
[7] According to Park, Y., Bang, Y., & Ahn, J.-H. (2020). How Does the Mobile Channel Reshape the Sales Distribution in E-Commerce? [Article]. *Information Systems Research*, *31*(4), 1164-1182. https://doi.org/10.1287/isre.2020.0937 , consumers in US prefer mobile payments and smart pays, consumers in Korea prefer traditional methods of credit card and cash payment.

primarily because low-income consumers do not have income or wealth to increase much spending.

There is little evidence that the consumers' behaviour is not affected by the introduction of card payments. (Venkatraman & Reddy, 2021) find that consumers in a local context of India consumers can choose to pay by cards or cash for multipay systems for their everyday expenditures. (Trütsch, 2020) also finds the same results for U.S. consumers in early stage of diffusion. (Shy, 2021) studies the effect of cashless stores in the U.S. on otherwise customers with no credit or debit cards and finds that transition to cashless stores leaves burden to such consumers who face higher non-monetary transaction costs in the sense that they need to deposit cash at ATM and get prepaid cards for spending.

A significant body of studies focuses on different types of electronic cards: payment cards issued by banks or payment cards issued by retailers. For payment cards issued by banks, (Borzekowski & Kiser, 2008) primarily stress the consumer preference toward (contactless) debit cards over credit card, cash or cheque payments through a study of consumer response to payment methods at check-out in U.S. merchants that do and those do not accept credit cards. Alternatively, consumers can use cards issued by retailers as an alternative to cash for low-value transaction purchases (Dennis, 2017; Gafeeva et al., 2018). Focusing on multifunctional cards, which collectively function payment and non-payment mechanisms (e.g., loyalty programs, identification), (Gafeeva et al., 2018) identify a reduction of more transparency of low-value purchases made via multifunctional cards than cash payment, which means that consumers cannot recall amount spent via these cards.[8] Similarly, (Chen et al., 2017) find that consumers using stored value cards issued by retailers use less cash.

2. Mobile payments

Empirical evidence on consumers' actual usage of mobile payments is, however, rather mixed. On the one hand, many authors explain the *demand increase* in mobile-payment technology adoption in that it reduces transaction frictions by shortening transaction time, improving shopping experience and thereby a effective increase in consumer spending (Ng et al., 2021). (Agarwal et al., 2019) use data on bank cards and mobile wallet transactions from Singapore consumers shows that QR code payments lead to usage increase, especially in small and new merchants. (Batista & Vicente, 2020) find that the increase in mobile payments is not uniform across consumers in rural areas of Mozambique. In their study, early adopters—who have made at least one transaction over the three-year period—make more bank transfers and payments than those who are new to the banking services. (Bailey et al., 2017) find that U.S. consumers have more confidence and intention towards shopping through mobile apps. Similarly, (Park et al., 2020) affirm a genuine increase in spending because consumers have more search activities, product evaluation than offline shopping, despite their concern over quality of goods sold.
One the other hand, (Aggarwal et al., 2020) find *no increase in consumer expenditures* through mobile payments in Malawi because consumers open mobile accounts to save more than to make transfers and expenditures. Also, the concern over some factors related to consumers' perception may lower their adoption and usage of mobile payments. (Pal et al., 2021) suggest some policy interventions that can promote actual usage of mobile payments for consumers in India such as improved convenience, reflection, and sensitivity to security and risk because these factors predict the future use intentions. (Crowe et al., 2010) further confirm low short-run effects of mobile payments on U.S. consumers' shopping demand and spending in that consumers face high costs of upgrading to new technology.

[8] This finding is rather important in that small, low-value purchase retailers which often have little incentive to switch to digital payments due to costs Ooi Widjaja, E. P. (2016). Non-Cash Payment Options in Malaysia [Article]. *Journal of Southeast Asian Economies*, *33*(3), 398-412. https://doi.org/10.1355/ae33-3g .

C. The pandemic and more usage of cashless payments

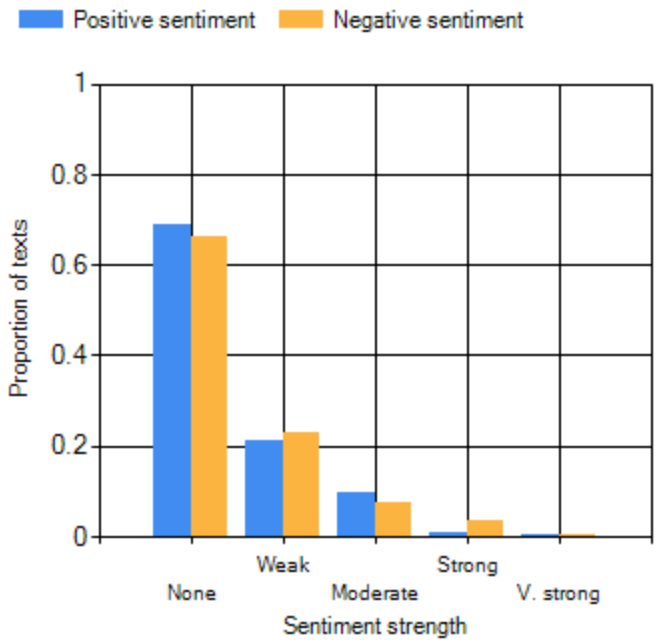
During the pandemic, consumers across the globe are making use of various technologies, especially contactless card payments or mobile payments including tap-and-go or QR code payments, to avoid human contact in cash payment (Gursoy & Chi, 2020; Jiang et al., 2021; Kerigan, 2020; Kim & Im, 2021; Shishah & Alhelaly, 2021). Indeed, there is an increase in digital payments, particularly contactless payments, mobile payments through tap-and-go or QR code payments (See (UK Finance, 2021) for UK retail sector). Recent studies emphasise the rising needs of consumers for digital payments in food, entertainment, and home environment (Akram et al., 2020; Kerigan, 2020).

3. The Cashless Consumer – Social Media Evidence of Attitudes

Using the social media scraping tool *Mozdeh* we analyze 3214 Twitter Posts containing the words cash, cashless, contactless. Within the limits of the tool, we restrict to UK users. We manually filter these to 2104 Posts which are relevant to our report. In particular we remove posts linked to conspiracy theories around tracking and monitoring of individuals via their non cash expenditure.

We cannot provide a full detailed sentiment analysis within the scope and limits of this report, however we note a small skew toward a negative sentiment:

Figure 1: Sentiment of Cashless Social Media Posts



Whole sample sentiment score = - 0.0586[9]

3.1 A description of consumer attitudes toward cashless payments

Both businesses and researchers into cashless payments may find it useful for an overview of self reported attitudes towards cashlessness. In the following section we summarize broad themes from the sample which could be grouped into clusters of at least 10 users.

Several posts discuss the disinclination to visit venues where cashless only payments are present, this is frequently combined with demographic indicators of age and comments around being underbanked. However, businesses which announce their decision to go cashless frequently find positive sentiment in comments responding to this. Likewise, small businesses often point toward ease of administration and a removal of a cash (and particularly) change burden. Throughout the sample increased safety associated with cashless payments, both in terms of no longer holding cash on premises and making the 'bank run' is emphasized. However some employees are posting concern over being in a cashless premises if it is

[9] (Mean Positive Score 1.4226, Mean Negative Score 1.4811)

robbed, querying how the thief will react to them if they have nothing to handover. There is the occasional comment regarding advice for the public to keep a small amount of cash on them for if they are mugged.

Returning to business convenience is also emphasized, in particular speedier payments, reduction of queueing and expedited checkouts. This is frequently associated with boosting the economy, but also with additional undesirable spending. A frequent criticism of businesses associated with the words safety and pandemic, is of them not having cashless options. For some users cash payments are associated with tax evasion and a sign of an old fashioned, behind the times, business. Businesses are advised to future proof themselves by turning away from cash. However in contrast to this, some users consider cash to be safe, both as less risk of fraud as card payments and as a mechanism to avoid undesirable spending. Additionally several users who identify as hospitality workers have noted a reduction in tips as customers move away from cash. There is a small but impactful number of posts where consumers have abandoned purchases at checkout when cash was requested.

There is a theme of consumer choice, many users describe their preference for cashless payments, yet also emphasize that they value the option to use cash if they wish. Often this breaks down to what the user feels is societally essential. They may be happy for cashless retail and hospitality, but they view things like public transport as still requiring a cash option. Some users consider that public houses which move to a cashless business model exclude demographics such as pensioners. Interestingly, there is some discussion of demographics who traditionally are seen as less engaged with the cashless society engaging due to Covid restrictions. For example there is commentary around the elderly embracing online banking and contactless payments.

In terms of payment method, a frequent request is for banks to allow customers to set their own contactless limits as well as introduce biometric controls on digital payment methods. Or even in some cases for a card which does not facilitate contactless payments at all.

Consumers are expecting increasingly smaller businesses to move away from cash, noting that it is not only large business and chains where they expect cashless options. Several users who identify as students expect their campuses to be cashless, like the customer comments on the businesses above. Students in the sample note that campuses which accept cash in their cafes, libraries and student unions are old fashioned.

The safety aspect of cashless payments is frequently associated with gender and is often discussed as leading to a perceived increase in safety of women and girls. However cashless transactions are also discussed as classist with a concern that they are excluding some members of society. Much of the strong negative sentiment is associated with the demographic impact of cashless payments whereas much of the moderate positive sentiment is associated with the safety and convenience of cashlessness.

4. Summary

A consistent theme from the literature and present in the social media scrape is that of easier payment mechanisms, such as contactless facilitating increased spending. This comes as little surprise given the stated ambition of the decision to increase the contactless spending limit. That of providing a boost to the retail economy. There is some evidence that the contactless limit shapes spending decisions with consumers altering their baskets to ensure they meet the limits. Even though to pay for a larger amount simply requires the entry of one's PIN. Likewise there is evidence that contactless payments increase low value purchase, as well as encouraging less healthy food choices. Equally, there is evidence that the effect of cashless payment systems to spur purchases is less impactful in lower income consumers, suggesting that the link between spending and ones resource is not fully broken. Additionally there is evidence that rapid movement to cashless payment mechanisms can reduce spend for consumers who - even when provided with the payment mechanism – exclusively use cash and are not confident with digital payments. The Social Media data from the pandemic period, whilst generally supporting this view, did offer some contrary discussion of (mostly) elderly offline consumers embracing online banking and contactless payments. Whilst we lack the data to infer why, it is clear that the academic literature lacks the context of the pandemic and the extensive support provided to facilitate this.

5. Recommendations for Businesses

The consensus in the literature is that digital payment technologies increase revenue, the decision to increase the UK contactless payment limit to £100 is based on this simple premise. The easier that it is to pay, the more likely consumers will purchase. However we note in the social media discussions, some potential consumer hostility to venues which go entirely cashless. It appears that consumer communication is key. Those business that communicated their cashless move to their consumers *before* the consumer tried to pay, either by social media, newsletter or otherwise tended toward far greater acceptance than business who did not and the consumer only found out when they tried to pay by cash. Much of the strong negative sentiment resulted from consumers who had been embarrassed at checkout and had to abandon their purchase. Business benefits may include, increased security, easier accounting, a reduction in cash handling costs, greater agility in pricing and reduced check-out times. The social media commentary also suggests that in some cases consumers may view cash payments with suspicion (cash in hand) or as indicative of an old fashioned, behind the times, organization.

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Table A: The effect of cashless payments on consumers

Payment Mechanism	The Effect on the Consumer	Explanation
mobile - QR code	increase in spending	consumers have better shopping experience than offline shopping
mobile	mixed evidence in an increase in expenditures	consumers open mobile accounts to save more than to make transfers and expenditures
mobile	increase in using mobile commerce in fast food industry	consumers enjoy digital coupons and easy-to-use mobile websites
digital	increase the intention of adopting digital payment methods	consumers are affected by trust, security, social influence in using digital payment
digital	reduce use of cash	consumers start paying cashless since stores prefer cashless payments
mobile (tap-and-go)	increase confidence of making purchases	consumers have more confidence, attitude towards shopping with mobiles
mobile	increase in mobile money usages	early adopters of mobile services make more bank transfers and payments
electronic cards	increase likelihood to make purchases	consumer make small, spontaneous electronic purchases to increase speed and efficiency to replace cash
digital (electronic cards/online bank transfer)	introduction of innovations (payment instruments, channels, and regulation) increase digital payments	consumers are better protected about their data, contracts, funds transferred
electronic cards	increase the preference toward electronic payments	consumer shifts toward electronic payments
digital	increase in local payment methods	consumers are limited to national purchases with local payment methods
electronic cards	reduce use of cash	consumer using stored value cards uses less cash
mobile	increase mobile spending	lower perceived value risk and higher social benefits increase spending via mobiles
mobile	low short-run effects on spending	low consumer demand because consumers face high costs of upgrading to new technology
electronic cards	shift from cash to non-cash payments	young consumers more likely to adapt to new payment instruments and technologies
digital	increase in digital payments	consumers spend more than they earn and more than they can afford

electronic cards	increase the use of low-value payments	consumer often make small electronic, low-value purchases and prefer mass transit cards than local cards
digital	increase the use of digital payments within poor cconsumers	easy of use, security, and trust increase the consumers' use.
multifunctional cards	multifunctional cards reduce transparency of low-value purchases made	consumers cannot recall amount spent via multifunctional cards compare with cash payment
electronic cards	increase the use of cashless payments	consumers have below-cost services (lower payment processing time, no transaction fee) and loyalty rewards compared to cash payments
digital	government policies improve social welfare in protecting privacy and increase consumers' use in electronic payments	consumers can protect privacy in payments at a lower cost
electronic cards	increase spending of low-income consumers at a lower rate than of other consumers	low-income consumers do not have income or wealth to increase much spending
digital	increase in using digital payments	consumers is willing to use various technologies in payment to avoid human contact in cash payment
mobile	trust can offset risk for mobile spending	consumers shop with more trust in established banks and lower risk of financial loss
mobile	increase the use of mobile payments	consumers with more optimism, innovativeness and understanding of convenience, compatibility increase the digital payment usage
mobile - QR code	increase the use of QR payments	consumers get used to QR code payments during pandemic
contactless	increase consumers' usage	consumers habit and satisfaction influence usage intention
digital	increase in digital payments due to pandemic	consumers shop more with digital payments in 3 needs: food, entertainment, and home environment during pandemic
contactless	increase in contactless payment	consumers shop with more contactless shopping
digital	increase in digital payments usage	consumers are affected by trust, security, social influence in using digital payment
digital	increase in digital payments usage	consumers shop with more convenience, rewards of digital payments than cash
digital	increase in digital payment methods	consumers shop with more benefits of digital payment methods
digital	increase in digital payments usage	consumers have more experience with digital payments since pandemic

digital	increase in usage of digital payments	consumers have more shopping experience through payment methods
electronic cards	increase in usage of card payments	consumers pay with cards through employee engagements
digital	increase consumers' usage	consumers shop with more trust, convenience in digital payments
mobile	increase in usage of mobile payments	mobile shopping convenience, security encourage future intentions of using mobile payments
digital	reduce the likelihood of spending	Fast Moving Consumer Goods consumers slow down impulse buying behavior due to less money on hand, less habit of cashless transactions
digital	increase digital payments	consumers in US prefer mobile payments and smart pays, consumers in Korea prefer traditional methods of credit card and cash payment
digital	spend more on unhealthy food	consumers shop with no negative emotional response to the loss of wealth as they shop with cash
mobile	increase mobile payments	consumers have more search activites, product evaluation than offline shopping. But consumers concern quality of goods sold
digital	increase in usage of mobile payments	consumers shop more with perception of technologies and social influence
mobile	increase mobile payments	service quality, attitude, effort expectancy and perceived risk affect consumers' continuation of using mobile payments
digital	will increase likelihood of online shopping	consumers are better protected against fraud by consumer protection rules
mobile banking	increase in usage of mobile banking	consumers adopt mobile banking when they have confidence in accessing and using it
mobile	increase in usage of mobile wallet	consumers adopt mobile wallet when they have confidence in technology savviness, awareness
digital	increase in usage of digital payments after Covid19	consumers use more due to their belief, preference
electronic cards	transition to cashless stores leaves burden to consumers with no credit or debit cards	consumers without cards face higher costs (need to deposit cash at ATM and get prepaid cards for spending)
digital	payment choices vary depending on purchase amount, type of goods and places	consumers' payment choices are mostly determined by their financial knowledge
electronic cards	personal and situation factors increase usage of cards	consumers are enthusiatic by cards and they can control and keep track of expenditures better than cash

digital payments	increase in usage of digital payments after Covid19 and Smart National initiative	urban consumers choose convenience and efficiency of digital payments over cash
mobile	increase in usage of mobile payments	consumers are more likely to use with higher trust and security of mobile systems
electronic cards	not affect card or cash payments	consumers can choose to pay by cards or cash at early stage of diffusion
electronic cards	decrease in cards payments	consumers more comfortable in using contactless cards during pandemic
electronic cards	increase in likelihood of using electronic cards	consumers' payment behavior depends on POS types (food/nonfood/gas/car park/etc) and safety
digital	not affect card or cash payments in local contexts	consumers can choose to pay by cards or cash for multipay systems for their everyday expenditures
digital	increase the use of digital payments in general and at a lower degree if susceptibility perception of COVID-19 is high	consumers' compatibility and trust increase their use of digital payments. However, susceptibility of COVID-19 decreases consumers' trust
digital	increase current and future use of digital payments	Consumers favor cashless transactions when they believe that handling cash presents a higher risk of infection
digital	increase digital payments through WeChat	consumers are likely to use with perceived service quality, security, compatability, easy of use, risk
digital	increase spending through digital products	diffusion of e-financial products and big data analytics capabilities increase digital payments