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Business as usual through contact tracing app: what influences intention to download?

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ABSTRACT

A contact tracing app can positively support the requirement of social and physical distancing during a pandemic. However, there are aspects of the user's intention to download the app that remain under-researched. To address this, we investigate the role of perceived privacy risks, social empowerment, perceived information transparency and control, and attitudes towards government, in influencing the intention to download the contact tracing app. Using fuzzy set qualitative comparative analysis (fsQCA), we found eight different configurations of asymmetrical relationships of conditions that lead to the presence or absence of an intention to download. In our study, social empowerment significantly influences the presence of an intention to download. We also found that perceived information transparency significantly influences the absence of an intention to download the app.

Introduction

In 2020, countries such as Australia (Australian Government – Department of Health, 2020) and France (Kelion, 2020) have rolled out a contact tracing app (henceforth referred to as 'the app') to slow down the spread of COVID-19 to reopen the economy. As of 2 December 2021, there were approximately 10.32 million cumulative total number of people tested positive for the COVID-19 in the UK (GOV.UK, 2021). This information highlights the importance of the launch of its contact tracing app to curb the pandemic at the end of May 2020. To illustrate its usage, between 5 November and 11 November 2021, there were 156,853 people being transferred to the contact tracing system and approximately 84% of those have been reached to self-isolate and to provide more details if necessary (Department of Health and Social Care, 2021). Although the government recommends downloading and use the app to curb the impact of the pandemic, the provision of the app in the UK has also been controversial and heavily criticised (Bowden & Lee, 2021; Cellan-Jones, 2020).

Social distancing behaviour is not an ordinary behaviour of social beings (Birch, 2020). It is a new norm that individuals need to learn and practice in response to the crisis. Scholars have adopted concepts such as the theory of planned behaviour (TPB) and locus-of-control to understand how social distancing behaviour affects consumer behaviour.

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Using TPB, scholars found that risk-taking attitudes (Ang et al., 2021) and risk-tolerance (Kim & Liu, 2022) can affect perceptions towards social distancing behaviour. Furthermore, Brown et al. (2021) found that the use of technology can reduce frustrations towards the requirement to socially distance themselves from others. Therefore, this paper addresses consumers' attitudes towards the adoption of a contact tracing app as a proxy for our understanding of social distancing behaviour.

Downloading the contact tracing app is one of the vital steps in helping businesses and consumers to resume their normal activities pre-pandemic. If businesses want to increase customer lifetime value post-pandemic, they need to make their customers feel rewarded, confident, secure, and anxiety-free in conducting business transactions (Dandis et al., 2021). Bronk (2020) argued that the use of mobile health technologies such as a contact tracing app increases the practicality of other measures such as social distancing behaviour and regular testing. In other words, a contact tracing app can be used as one of the solutions to curb the pandemic (Rowe, 2020). The sense of empowerment is also apparent in the attempts to promote the download rate of the app with slogans such as 'protect your loved ones' and 'help the NHS,[1] stop the spread of coronavirus in the UK' (National Cyber Security Centre 2020). However, it does not mean that issues, such as privacy concerns and, subsequently, the effectiveness of the app, are negligible. Reports have indeed shown that concerns over how the government uses sensitive information collected through the app, and how much control users have over their information, can affect the intention to download (OECD, 2020).

The app emerges as a proactive and reactive tool to cope with the disruptive impact of COVID-19 that renders businesses and consumers more vulnerable (Echeverri & Salomonson, 2019: Falchetti et al., 2016). The app can be used to understand people's social distancing behaviour (Kaspar, 2020), to further address spatial vulnerability and consciousness (Saatcioglu & Corus, 2016), and to help businesses and consumers in coping with vulnerable situations (Batat et al., 2017). Additionally, the critical examination of attitudes and behaviours towards the app goes beyond its ephemeral values during the pandemic. It addresses the core question of privacy and information disclosure in the era of the digital economy where technologies allow surveillance to be more obtrusive and covert.

Several studies have generated useful insights regarding the app, such as what influences the unwillingness to download and use the app (Chan & Saqib, 2021); the importance of emphasising positive values in helping societies (T. Li et al., 2021); the importance of the app in helping local authorities to handle confirmed cases (Lee & Kim, 2021); the understanding of public attitudes towards COVID-19 contact tracing app (Horvath et al., 2020; Williams et al., 2021); and the effects of downloading a government-issued COVID-19 contact tracing app on psychological distress (Kawakami et al., 2021).

Individually, the aforementioned studies generated useful insights to help our understanding of the adoption of the app. However, there remains a gap in providing a more holistic view of factors concerning the party responsible for the app's data management and how personal information is treated. This is particularly important as England is considered one of the countries most affected by the COVID-19 pandemic (Wymant et al., 2021). The urgency behind the contact tracing app during the COVID-19 pandemic distinguishes it from other generic mobile health apps. Therefore, this study provides different insights than the works of Guo et al. (2016) or Hussain et al. (2018) in examining

privacy issues of mobile health apps. Furthermore, understanding risky behaviours and understanding the sources of risks and consumers' vulnerability are important for marketing purposes (Batat & Tanner, 2021). This adds to the urgency for the identified gaps to be addressed.

To address the gaps in marketing research regarding the intention to download the app during the COVID-19 pandemic, this study uses the privacy calculus framework and considers other designs relevant to the research. We kept the perceived privacy risks of the privacy calculus framework and replaced generic perceived benefits with social empowerment in influencing the intention to download the app. To date, our understanding of how social empowerment influences the intention to download a mobile app, especially during crises, is limited. Scholars examined the notion of empowerment as an action of empowering individuals (Spreitzer et al., 1997; Thomas & Velthouse, 1990) to work on certain goals, such as entrepreneurship (Anggadwita et al., 2021) or democratisation (Noutcheva, 2016), although the marketing domain mostly regards this concept as a psychological outcome (Hanson & Yuan, 2018). Further research into the role of social empowerment to encourage users to download a mobile health app such as the contact tracing app is therefore required.

The work of Chan and Saqib (2021) has addressed the issue of privacy concerns in influencing the app's download intention. However, they called for future studies to address a more holistic view of what influences the adoption of the app by examining factors that are relevant to politics and government. Our study addressed this call by investigating users' attitudes towards government, especially their level of trust and perceived intrusion concerns. Moreover, to understand behaviour when it comes to information collected and shared, the level of transparency (Zhou et al., 2018) and control (Hajli & Lin, 2016) can be substantial in influencing users' decision-making process. Hence, perceived information transparency and control are essential to understanding the intention to download the app.

Therefore, this study aims to investigate how the concept of a privacy calculus framework (with social empowerment as its perceived benefit), perceived information transparency and control, and attitudes towards government, affect the intention to download the contact tracing app in England. To achieve this aim, this study collected 180 survey responses of participants who live in England and adopted fuzzy-set qualitative comparative analysis (fsQCA) to analyse the data. By implementing fsQCA, this research assessed the causal asymmetrical relationships of constructs in our conceptual model and investigated not only how the presence of conditions leads to an outcome, but also how the absence of conditions leads to the presence or absence of an outcome (Fiss, 2011; Ragin, 2008).

There are three contributions that this study makes to the marketing literature stream. Firstly, it showcases the flexibility of a privacy calculus framework in addressing privacy-related issues in different contexts, including the COVID-19 pandemic. Secondly, by drawing more precise insights from the intention to download a contact tracing app, social empowerment can illustrate a more accurate picture of the app's benefits. This contribution adds to the existing pool of marketing literature (see, Auh et al., 2019; Hanson & Yuan, 2018) on how empowerment can increase potential users' intention to adopt a new mobile app. This aspect of social empowerment is particularly unique because it may reveal how societies work towards a collective constructive goal that allows businesses and consumers to return to, some extent of, normality post-pandemic. Thirdly, by using fsQCA, we also

provide novel insights into the causal asymmetrical relationships among different con-structs within our conceptual model. For instance, we further established the incongruous role of perceived information transparency as previously suggested by other scholars (Albu & Flyverbom, 2019; Drucker & Gumpert, 2007; Grimmelikhuijsen et al., 2013), and we found that the government intrusion concern, or the absence of trust in government, does not necessarily lead to negative behavioural intentions.

The contact tracing app is not the only non-profit or government-owned mobile app. There are other mobile apps for emergency purposes (e.g. Federal Emergency Management Agency (FEMA), 'what3words') and this study provides directions towards future research in understanding the willingness to download these apps. By highlighting the causal asymmetrical relationships of constructs in our conceptual model, organisa-tions can use our findings to modify and improve their communication strategies to encourage the intention to download their apps.

Contact tracing app

To curb the COVID-19 pandemic, one of the preliminary tools required is a contact tracing app (Rizzo, 2020). It is argued to be one of the key strategies to counter an unknown transmission and to slow the spread of a virus (T. Li et al., 2021; Scherr et al., 2021). This type of app adopts a proximity tracking approach using geolocation tools and Bluetooth to allow an encrypted exchange between smartphones within a defined risk radius and exposure time (Pagliari, 2020). The app complements social distancing and hygiene measures to reduce the risk of infection (Kaspar, 2020). It functions by notifying 'users when they have had critical contact (in terms of time and spatial proximity) with a person infected with SARS-CoV-2' (Kaspar, 2020, p. 2).

To use a contact tracing app, users must download the app onto their smartphone and allow their encrypted information to be exchanged and monitored. By downloading the app, users systematically give consent to specific implicit data sharing and data collection activities. According to the National Cyber Security Centre (2020), data collected by the app include the users' postcode, the phone's make and model, the version of the app, details of venues that users check in at, and any symptoms that users enter, but no personal information is collected. Nevertheless, ethical considerations and privacy con-cerns still inevitably emerge amidst the download intention of this app due to the amount of health-related data exchanged when the app is on (Parker et al., 2020; Von Wyl et al., 2021). Eventually, the ethical consideration and privacy risks can lead to an unwillingness to disclose the information (Wright et al., 2019), and thus not downloading the app.

Theoretical background

Perceived information transparency and control

The commentary from Bengio et al. (2020) on the general use of a digital contact tracing app, suggests that downloading such an app requires governments and their associated groups to be transparent in disclosing the specific information collected and shared. The concept of perceived information transparency (TRP) refers to the level of transparency in informing users of the purposes and mechanisms behind data collection (Awad &

Krishnan, 2006). Several scholars have suggested that the concept of transparency remains vague, although it has the strongest association with the perceived quality of information and information disclosure (Albu & Flyverbom, 2019). Privacy concerns usually emerge when consumers disclose information, and therefore the transparency of how collected data are used and treated has a strong association with their willingness to proceed with the disclosure (Awad & Krishnan, 2006).

The level of transparency also has a different impact on different types of consumers. Awad and Krishnan (2006) argued that as privacy fundamentalists are extremely concerned with how their data are used and thus more hesitant in sharing their data, they put a higher value on the information transparency. The purpose of collecting the health-related data in a contact tracing app is to consistently monitor the spread of the virus, therefore constant access to users' data is unavoidable. Cicala et al. (2014) suggested that if data are less frequently accessed, the effect the transparency has on consumers' attitudes and behaviours is less impactful. This implies that constant access to data generated from a contact tracing app increases the importance of perceived information transparency.

Zhou et al. (2018) found that with the presence of perceived information transparency, customers' behavioural intention is positively influenced. But it is important to note that the effect of perceived information transparency might depend on the subjective perception of the user, as suggested by Shin and Park (2019). Furthermore, scholars have also suggested that information transparency may also cause distrust if the communication of transparency practices is considered to be manipulative (Albu & Flyverbom, 2019; Drucker & Gumpert, 2007). Nevertheless, scholars found that information transparency can significantly improve marketing performance (Chong et al., 2016) and that it signifies the ability to protect information and, subsequently, increase customers' confidence (Hung & Wong, 2009). The confidence itself emerges as customers are more aware of the potential losses or risks (Zhou et al., 2018), which allows users to be more cautious in their decision to download an app (Harborth & Pape, 2021).

Proposition 1: Perceived information transparency (TRP) has a positive impact on download intention (DI).

Perceived information control (PIC) is often associated with users' choice or consent regarding their privacy management and information disclosure (Acquisti et al., 2013). Having a perception of control over their information enhances customers' sense of security, and previous studies have shown that the perception itself has a stronger impact than the actual control (Skinner, 1996). In terms of using information and communication technology (ICT), Tarafdar et al. (2010) found that perceived information control is one of the psychological needs that provides reassurance when users adopt a certain technology. This includes the use of social media platforms and information sharing (Hoadley et al., 2010).

It is also suggested that the perception of control has an impact on both subjective and objective beliefs of how users may lose control during the process of disclosing information (Hoadley et al., 2010). With an app collecting health-related information, it is important to understand how control over the app and the information collected on the app can affect the level of concerns regarding its download and usage (Degirmenci, 2020). A stronger sense of information control subsequently increases users' positive behavioural intentions towards the use of technology and particularly their

information-sharing behaviour (Hajli & Lin, 2016). It enhances consumers' confidence in the desired outcomes of disclosing information because perceived information control implies an ability to carry out necessary actions to safeguard personal information (Wang, 2019).

Proposition 2: Perceived information control (PIC) has a positive impact on the download intention (DI).

Attitudes towards government

Government intrusion concerns

Dinev et al. (2008, p. 217) suggested that the justification behind government surveillance is to 'maintain social order and economic management'. The surveillance associated with the app, which aims to slow down the virus by monitoring the movement of confirmed cases, is potentially justifiable as the government aims to monitor, maintain, and improve public health. However, it does not lessen public concerns over the level of surveillance. Nam (2017) found that when it comes to government surveillance and intrusion, information sensitivity and perceived privacy risks are crucial. This implies that disclosing sensitive information such as health-related information on government-owned platforms may raise an intrusion concern. Nam (2018) argued that there are two conditions required to develop users' positive attitude towards the possibility of government surveillance and intrusion: perceived public benefit and self-identified liberalism as the ideological stance. Similarly, Potoglou et al. (2017) argued that in order to gain consent from users for continuous government intrusion, there needs to be a proper legitimate legal basis for such intrusion.

Government intrusion concern usually triggers negative attitudes towards information disclosure or the use of a platform (Nam, 2018), as the perceived intrusion is considered to violate personal space and raise privacy concerns (Xu et al., 2011). In the context of using smart devices, Mani and Chouk (2019) also presented a similar finding where intrusion concerns deter consumers from using smart devices. Regarding sensitive health-related data, protecting privacy becomes more pressing for users, as the disclosure of data can reveal an individual's identity (Stuart & Levine, 2017) and government intrusion concerns can negatively influence the willingness to use an app and disclose information.

Proposition 3: Government intrusion concern (GIC) has a negative impact on download intention (DI)

Trust in government

Trust refers to a construct where an individual has the willingness to depend on and be vulnerable to the other party despite the risks or uncertainties (McKnight et al., 2002). In using ICT that involves potentially sensitive information disclosure, the notion of trust is also important. Prior studies found that trust significantly influences

the willingness to disclose information, especially if the users have confidence in how to circumnavigate the risks of disclosing information on an app (Keith et al., 2015; Morosan & DeFranco, 2015).

In adopting a certain technology, trust holds a key role in enhancing the perceived benefits of how the technology can improve lives (Mulcahy et al., 2019). This positions the notion of trust as a significant predictor of behavioural intentions (Hong, 2015). This also indicates that trust becomes even more critical when an app is government-owned and requires sensitive information to be disclosed. If users are confident that the government, who oversees their data, is trustworthy, the willingness to download the app and share sensitive information can increase. After all, if users trust that the government will pose no harm or threat to their privacy regarding their health-related information, then negative consequences can be perceived as unlikely to occur (Hong & Cha, 2013). Trust is also fundamental in the context of working together to produce outcomes, or co-production, with the government (Kang & Van Ryzin, 2019). This suggests that trust can have a positive influence in helping the government to tackle a public health issue.

Proposition 4: Trust in government (TG) has a positive impact on download intention (DI)

Privacy calculus framework

Within the concept of a privacy calculus framework, consumers weigh the benefits and the risks of information disclosure, to appraise whether the benefits can offset the privacy risks (Culnan & Armstrong, 1999; Li et al., 2010). In the context of this study, this framework suggests that users deliberate over whether the use of the app and information disclosure, and the benefits to society are worth the privacy risks. Findings from a study by Pomfret et al. (2020) highlighted users' careful assessment of the benefits of multifarious types of information compared with the perceived privacy risks, which subsequently activate their respective privacy protection strategies.

Perceived privacy risks

Perceived privacy risks (PPR) refer to the assessment of the level of privacy and secrecy concerning information disclosure, which usually influences the willingness to disclose information (Kehr et al. 2015). Besides direct information disclosure on an electronic platform, the adoption of a digital application itself also has an impact on the attitudes and behaviours towards downloading such an app. A study by Balapour et al. (2020) on mobile applications found that perceived privacy risks have a significant impact on influencing users' attitudes and behaviours towards using mobile apps. Chopdar et al. (2018) also echoed a similar argument where perceived privacy risks have a significant influence on the adoption of mobile technology in India. Mani and Chouk (2019) argued that the risks of intrusion and unauthorised use of personal information also affect how consumers resist the use of ICT such as smart devices and subsequent information disclosure on those devices.

The newness of a contact tracing app also adds to the sense of uncertainty of the consequences of installing this app. This likely enhances the level of unwillingness to download the app, as familiarity is one of the factors that can positively affect behavioural intentions (Lee & Kwon, 2011). Additionally, several studies highlighted that for health-related mobile applications, the perceived risks can be more substantial as the app may contain confidential health information (Chen et al., 2018; Egea & González, 2011). These studies strengthen the notion that perceived privacy risks are one of the deterrents of users' intention to adopt or download a mobile health app such as the contact tracing app.

Proposition 5: Perceived privacy risks (PPR) have a negative impact on the download intention (DI)

Social empowerment

The app has potential privacy risks, but it can also significantly contribute to society (Cebrian, 2021). For the risks to have less impact, one of the strategies to increase users' willingness to download the app is to incentivise users with a certain benefit. Therefore, we investigated how the benefit of social empowerment can incentivise the intention to download the app.

Social empowerment (SE) is defined by Hanson and Yuan (2018, p. 771) as 'an individual's ability to impact the experiences and outcomes of others . . . via proactive behaviours.' Zimmerman (2000) regards social empowerment as a psychological factor that could create social change. This concept seems appropriate for this research as the contact tracing app addresses a societal need to create a safer environment for businesses and consumers. Our study adopted the concept of empowerment as it is considered a social benefit that consumers seek (Goldsmith, 2005; Henry, 2005). Their act of downloading the app is the first step to potentially keeping others safe and curbing the pandemic.

People are willing to give up their privacy for perceived benefits (Bandara et al., 2020). Within the privacy calculus framework, benefits such as social empowerment can have a stronger impact on consumers' attitudes towards ICT adoption and information disclosure when the benefits outweigh the risks (Kim et al., 2019). This argument bears a similar weight to the review of existing marketing studies using the notion of empowerment to determine the positive effect on consumers' attitudes and behaviours (Hanson & Yuan, 2018). Prentice et al. (2016) found that being empowered enhances consumers' proactive participation. Furthermore, Yuksel et al. (2016) found that empowerment enhances positive customer reactions towards both online and offline activities. This implies that messages conveying the impact of empowerment from having the app on the smartphone can positively influence the intention to download the app.

In addition, Auh et al. (2019) also highlighted the behavioural shift from passive to active participation provides consumers with the psychological benefits of being empowered by their contributions. Furthermore, social empowerment in itself is a subjective perception of individuals and not an objective truth (Hanson & Yuan,
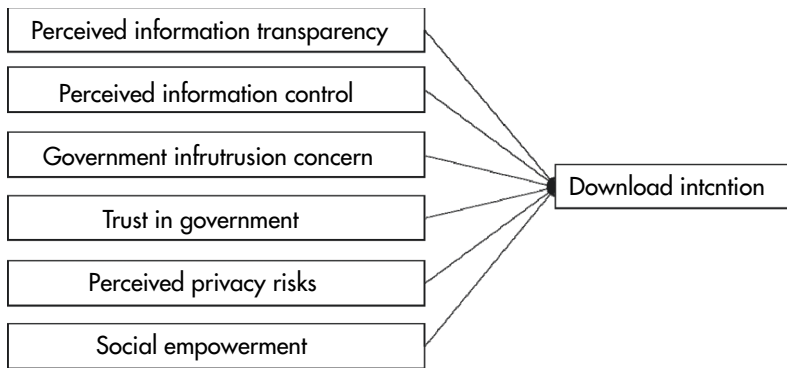
Figure 1. Conceptual model.

2018), which signifies that the consequences of their proactive behaviours can be independent of the driver of the behaviour to download an app or to disclose information.

Proposition 6: Social empowerment (SE) has a positive impact on download intention (DI).

We incorporated these six prepositions into our conceptual model to understand the download intention towards the app (Figure 1).

Methodology

Data collection

This study adopted a purposive snowball sampling methodology to collect data, which is an appropriate method when employing interconnected networks of people to obtain relevant participants for this study (Pappas et al., 2016). Other studies have also successfully employed the snowball sampling methodology to research similar context-specific subjects and circumstances (Aliakbar et al., 2013; Canhoto & Clark, 2013).

For the sampling method, we targeted participants who reside in England and are aware of the app. There are several reasons why England was chosen as the geographical context for this study. First, the COVID-19 pandemic has wreaked havoc on the UK, including England, having one of the worst confirmed mortality rates in the world in 2020 (Wymant et al., 2021). Moreover, because the app relies on a centrally administered test and trace system, England provides an ideal scenario to evaluate the effectiveness of contact tracing (Fetzer & Graeber, 2020).

To collect our data, Facebook users who are aware of the app and belong to groups that explicitly show their support towards the National Health Service (NHS) received an invitation to participate in our survey. The awareness of the app was further confirmed within the survey where the opening statement for relevant questions explicitly addresses participants' knowledge of the contact tracing app. The researchers urged these users to not only answer the survey, but also to distribute it to their networks. Finally, the sample consists of 180 individuals who voluntarily participated in this study.

Respondents

The sample of respondents consists of 73.7% female and 26.3% male participants. Most of the respondents (76.5%) have a bachelor's or a higher education degree. Regarding age, 9.5% of the respondents were aged 18–24, 7.8% of the respondents were aged 25–29, 28% of the respondents were aged 30–39, 25.1% of the respondents were aged 40–49, and 29.6% of the respondents were aged 50 and over.

Survey instrument

The questionnaire consists of questions related to the measures of constructs from the conceptual model followed by several questions on the demographics of the participants. The questionnaire adopted reflective scales from previous studies, using a 7-point Likert scale from 1 ('Strongly disagree') to 7 ('Strongly agree'). Table 1 presents the constructs and their sources. Appendix lists the survey questions used to measure each construct.

FsQCA

Qualitative comparative analysis (QCA) provides an alternative and innovative approach to understanding how configurations of causal conditions can lead to the same sets of outcomes (Woodside, 2013). QCA is also capable of analysing causal asymmetry to examine conditions that lead to the absence of an outcome to be distinguished from the presence of the same outcome (Wagemann et al., 2016). QCA and its variants such as crisp set QCA (csQCA) and fuzzy set QCA (fsQCA) have been argued to provide a stronger 'understanding of non-linear and synergistic effects of predictor' (Helme-Guizon & Magnoni, 2019, p. 730).

   Rihoux and Ragin (2009) stated that QCA also has the ability to work with small-N research and to allow the possibility of understanding both quantitative and qualitative phenomena. Ragin (2008) first developed QCA as an approach to analyse dichotomous variables as crisp set QCA and later introduced fuzzy set QCA to solve the dichotomy issue between force-fitting cases into a set of membership and non-membership. FsQCA allows the calibration of 'partial membership in sets using values in the interval between [0] (non-membership) and [1] (full membership) without abandoning core set-theoretic principles' (Rihoux & Ragin, 2009, p. 88). Furthermore, the versatility of QCA goes beyond the implementation of qualitative datasets from interviews. This study used a questionnaire for its data collection and calibrated the collected data using fsQCA to produce fuzzy scale

Table 1. Measures.

Construct	Source
Social empowerment (SE)	Hanson and Yuan (2018)
Perceived privacy risks (PPR)	Kehr et al. (2015)
Government intrusion concern (GIC)	Dinev et al. (2008)
Trust in government (TG)	Krasnova and Veltri (2010)
Perceived information transparency (TRP)	Awad and Krishnan (2006)
Perceived information control (PIC)	Xu (2007)
Download intention (DI)	Gu et al. (2017)

variables. Wagemann et al. (2016) also suggested that QCA holds a prominent quality for scholars in business and management, therefore this study adopted fsQCA to investigate configurations of conditions that lead to the intention to download an app.

Calibration

To proceed with fsQCA, calibration of the measures into fuzzy sets with continuous values ranging from 0 to 1 is necessary. Using fsQCA 3.0, we calibrated the variables into three thresholds based on the value of the 7-point Likert scale: full membership at 7, full non-membership at 1, and the cross-over point at 4; this is to define whether the case is more in or out of the membership (Ragin, 2008). Following the completion of the calibration, we generated a truth table and its further refinement procedure based on frequency and consistency (Ragin, 2008) to present the predictors and possible combinations. There are two elements of the truth table that require further examination; they are consistency and coverage. Consistency refers to 'the degree to which a combination of causal conditions is consistent with an argument of sufficiency' and coverage concerns 'the relative importance of combinations of sufficient conditions in the effort to explain or "cover" instances of the outcome' (Ragin, 2003, p. 1). When refining the truth table, we set the frequency cut-off point at 1 as this is acceptable for small- and medium-sized samples, and the lowest acceptable consistency at > 0.85, which is higher than the recommended threshold of 0.75 (Ragin, 2008). The proportional reduction in consistency (PRI) score threshold is set to 0.67 'to avoid simultaneous subset relations of attribute combinations in both the outcomes and their negations' (Schneider & Wagemann, 2012, p. 242). Following the refinement, we ran a 'Standard Analysis' procedure to generate complex, intermediate, and parsimonious solutions.

Findings

Analysis of sufficient conditions

This study adopted the intermediate solutions (Table 3) from the truth table (Table 2) because it presents the subsets of the most parsimonious solutions and supersets of complex solutions (Valaei et al., 2017). Rihoux and Ragin (2009) also argued that intermediate solutions are superior.

Table 3 shows that all solutions are informative because all consistency values are above 0.91 and are adequate, as most raw coverage values range between 0.31 and 0.52 (Woodside, 2013). The raw coverage represents 'the proportions of membership scores in the respective outcomes explained by each term of the solution' and is 'similar to the meaning of R^2 in statistical regression processes' (To et al., 2019, p. 790). Table 3 displays the intermediate solutions consisting of eight causal configurations that lead to the presence of download intention.

Analysis of necessary conditions

Table 4 presents the analysis of the necessary conditions for the presence of the intention to download. There are two threshold measurements that we need to examine: the first threshold (consistency value ≥ 0.90) indicates that the condition is necessary, and the second

Table 2. Truth table.

GIC_cal	TRP_cal	PIC_cal	PPR_cal	TG_cal	SE_cal	number	DI_cal	raw consistency[a]	PRI consistency[b]	SYM consistency[c]
0	0	1	0	1	1	20	1	0.976690	0.946565	0.946565
1	1	1	1	1	1	6	1	0.939803	0.793232	0.798235
1	1	0	1	1	1	5	1	0.930368	0.751624	0.757536
0	0	0	0	0	1	4	1	0.943520	0.798620	0.803051
1	1	1	0	1	1	4	1	0.973218	0.884546	0.884547
1	1	1	1	0	1	3	1	0.936297	0.701638	0.720538
1	1	1	0	1	0	3	1	0.958735	0.701986	0.723551
0	1	1	0	1	0	3	1	0.943811	0.705069	0.705069
0	1	1	0	0	1	3	1	0.956888	0.844893	0.844893
1	0	1	1	1	1	3	1	0.970247	0.846524	0.846523
1	0	1	0	0	0	2	1	0.955534	0.701297	0.701298
0	1	1	0	0	0	2	1	0.949362	0.726881	0.728448
1	1	1	0	0	0	2	1	0.959632	0.753055	0.753055
1	1	0	0	0	1	2	1	0.942347	0.761024	0.761025
1	0	0	1	1	1	2	1	0.956702	0.793859	0.793861
1	1	1	0	0	1	2	1	0.957704	0.796363	0.796363
0	1	0	0	0	1	2	1	0.944835	0.800242	0.800243
1	0	1	1	0	1	2	1	0.976052	0.859041	0.859043
0	1	0	0	1	1	2	1	0.964159	0.871830	0.871831
1	0	1	0	0	1	2	1	0.976530	0.877108	0.877109
0	1	1	0	1	1	2	1	0.961710	0.877526	0.877526
0	0	1	0	0	1	2	1	0.964871	0.887640	0.887640
0	0	0	1	0	1	1	1	0.927877	0.686066	0.686066
0	0	1	0	0	0	1	1	0.934017	0.699187	0.699187
1	0	0	0	0	1	1	1	0.948198	0.732556	0.732559
0	1	1	1	0	1	1	1	0.944810	0.747491	0.747492
1	1	0	0	1	1	1	1	0.961925	0.827323	0.827325
0	1	1	1	1	1	1	1	0.962582	0.828302	0.828302
0	0	1	1	0	1	1	1	0.965849	0.829694	0.829695
0	1	0	1	1	1	1	1	0.959592	0.829896	0.829897
0	0	0	0	1	1	1	1	0.975799	0.911110	0.911112

*_cal indicates that the construct has been calibrated.
[a]Raw consistency: 'Consistency of a single truth table row' (Schneider & Wagemann, 2012, p. 332).
[b]PRI consistency: The sufficiency degree to which a variable leads to an outcome or a negation of outcome (Schneider & Wagemann, 2012).
[c]SYM (symmetric) consistency: The degree of importance of studying the presence and absence of an outcome (Schneider & Wagemann, 2012).

Table 3. Solutions for the outcome conditions.

	Frequency cut-off: 1 Consistency cut-off: 0.927877 Model: DI_cal = f(GIC_cal, TRP_cal, PIC_cal, PPR_cal, TG_cal, SE_cal)			
	Solution	Raw coverage	Unique coverage	Consistency
1	PIC_cal*~PPR_cal*~TG_cal	0.385286	0.00702655	0.929378
2	PIC_cal*~TG_cal*SE_cal	0.394974	0.01820520	0.920824
3	~PPR_cal*~TG_cal*SE_cal	0.431917	0.01969550	0.922884
4	TRP_cal*PIC_cal*~PPR_cal	0.418928	0.01447900	0.923926
5	TRP_cal*TG_cal*SE_cal	0.407963	0.01575650	0.912598
6	~GIC_cal*~PPR_cal*SE_cal	0.523474	0.08783200	0.946123
7	~GIC_cal*~TRP_cal*~TG_cal*SE_cal	0.313424	0.00436509	0.922595
8	GIC_cal*PPR_cal*TG_cal*SE_cal solution coverage: 0.757372 solution consistency: 0.887475	0.330352	0.00723952	0.919407

threshold (consistency value between 0.80 and 0.90) indicates a quasi-necessary condition or almost always necessary condition (Schneider et al., 2010). Besides analysing the presence

Table 4. Analysis of necessary conditions for the presence of outcome.

Outcome variable: Condition	DI_cal Consistency	Coverage
GIC	0.595443	0.558128
~GIC	0.667092	0.785311
TRP	0.721707	0.576642
~TRP	0.530501	0.798046
TG	0.582348	0.815201
~TG	0.655168	0.545084
PIC	0.641328	0.834233
~PIC	0.616522	0.537249
SE	0.834132	0.841116
~SE	0.452677	0.489580
PPR	0.602257	0.537943
~PPR	0.683806	0.858230
SE_cal+~PR_cal	0.915789	0.800559
TG_cal+~GIC_cal	0.792292	0.754385
PIC_cal+TRP_cal	0.869051	0.603371

Conditions in bold indicate that they are either a necessary or quasi-necessary condition.

and absence of each independent variable, we also analysed three combinations of conditions ('+' being the logical operator 'or') regarding how they perceived the transparency and control of information, attitudes towards the government, and both elements of the privacy calculus framework. The results indicate that the presence of social empowerment or the absence of perceived privacy risks (SE_cal + ~PPR_cal) is necessary, with social empowerment (SE_cal) and the combination of the presence of perceived information control or information transparency (PIC_cal + TRP_cal) to be the quasi-necessary conditions to generate the presence of download intention.

We also analysed the necessary conditions for the absence of the intention to download (Table 5). The findings are more conclusive regarding the factors that discourage the intention to download. We have 6 independent conditions that are quasi-necessary for the absence of download intention; they are the presence of government intrusion

Table 5. Analysis of necessary conditions for the absence of outcome.

Outcome variable: Condition	~DI_cal Consistency	Coverage
GIC	0.800976	0.687955
~GIC	0.485535	0.523750
TRP	0.853492	0.624873
~TRP	0.421750	0.581358
TG	0.403276	0.403276
~TG	0.855932	0.652525
PIC	0.420472	0.501177
~PIC	0.860927	0.687448
SE	0.484954	0.448094
~SE	0.828047	0.820611
PPR	0.876729	0.717574
~PPR	0.435460	0.500802
~SE_cal+PPR_cal	0.953759	0.687176
~TG_cal+GIC_cal	0.938422	0.613009
~PIC_cal+~TRP_cal	0.906123	0.621336

Conditions in bold indicate that they are either a necessary or quasi-necessary condition

concern (GIC_cal), presence of perceived information transparency (TRP_cal), presence of perceived privacy risks (PPR_cal), absence of trust in government (~TG_cal), absence of perceived information control (~PIC_cal), and absence of social empowerment (~SE_cal).

Additionally, when we combined a few conditions, we found that these configurations are necessary for the outcome of the absence of download intention (~DI_cal). These configurations are the absence of social empowerment or presence of perceived privacy risks (~SE_cal+PPR_cal); the absence of trust in government or presence of government intrusion concern (~TG_cal+GIC_cal); and the absence of perceived information control or absence of perceived information transparency (~PIC_cal+~TRP_cal).

Discussion

Perceived control and transparency of information

Individuals who perceive the presence of control and transparency over the exchanged information will feel more confident about the quality and reliability of the agents collecting the information (Nicolaou & McKnight, 2006). Their arguments resonate with our findings where, either individually or collectively, PIC and TRP can be combined with other constructs in generating the presence of download intention. For instance, when combined with the absence of perceived privacy risks, control and transparency of information are sufficient to generate the presence of download intention. It echoes the argument that perceived information transparency positively affects behavioural intention (Zhou et al., 2018). This configuration also adds to the understanding of the relationship between perceived risks, behavioural control, and transparency, in influencing social distancing practice as one of the measures to curb the pandemic (Lee & Li, 2021).

Our findings furthermore identify the critical role of perceived information control in complementing the benefit-risk trade-off of the privacy calculus framework. In the results of our sufficiency analysis, the presence of PIC is a part of configurations that lead to the presence of download intention when combined with either the presence of social empowerment or the absence of perceived privacy risks. Aaron Gabisch and Milne (2014) suggested that businesses can strongly influence the attitudes towards the control beliefs by providing compensation. This implies that by using the right terminology, emphasising the benefits of sharing information or downloading an app can also work in conjunction with perceived information control. This can explain one of our findings where perceived information control and social empowerment can lead to a download intention even when there is no trust in the government. Whilst Li et al. (2014) found that trust and PIC can override the potential privacy risks, we found that the lack of trust can be compensated when privacy risks are absent, and PIC is present. By using Westin's (1968) definition of privacy, we interpreted this configuration as an acknowledgement of the importance of being in control of our personal information and untroubled by privacy risks in encouraging download intention despite users' lack of trust in their government.

Attitudes towards government

FsQCA results further display the critical role of trust in government and government intrusion concern in influencing the intention to download. A study by Park and Blenkinsopp (2011) suggested that trust in government and transparency are critical to generating positive attitudes and behaviours. In one of our configurations, we also found that perceived information transparency, in its configuration with the presence of social empowerment and trust in government, can lead to the presence of download intention. Considering the sensitive information involved in the adoption of the app, this finding confirms that it is important for the government to gain users' trust and simultaneously be transparent about how they collect, use, and manage the information. This also confirms that transparency correlates positively with trust and that these two constructs are reciprocal (Kanagaretnam et al., 2010). Additionally, the configuration also shows that emphasising the point that downloading the app can collectively contribute to a greater good is also important.

Our results also show the complexity of the consumers' decision-making process. For example, the presence of government intrusion concern and perceived privacy risks, which commonly generate negative attitudes, when combined with the presence of trust in government and social empowerment, are sufficient to generate the presence of the intention to download. This conflicting configuration can be linked to the concept of the privacy paradox, where there is a discrepancy between consumers' attitudes and actual behaviours (Norberg et al., 2007). To interpret this finding, we considered the m-Health services study by Guo et al. (2016), where trust has the ability to mediate the impacts of privacy paradox and to encourage a positive adoption of m-Health services. Nevertheless, the configuration from our research provides another piece of the puzzle in understanding and explaining the privacy paradox by suggesting that trust can be one of the concepts to encourage a positive behavioural intention despite the awareness of privacy and surveillance risks.

In cases where users are concerned about government intrusion and privacy risks, our findings highlight the importance of emphasising the element of trust in government and social empowerment. This configuration of conditions reflects the argument by Conger et al. (2013) where they found that the decision calculus of behavioural intentions highly considers the interwoven existence of trust, risks, and benefits, as well as the trade-off among each of them. Conger et al. (2013) further suggested that in the interest of social good, the decision-making process becomes more intuitive as users will strike a balance between resolving social issues and a need for personal privacy. This argument strengthens the various configurations that we presented within our study. Our findings also further reinforce the legitimacy of understanding privacy calculus in the decision-making process of either download or information disclosure intention.

Furthermore, in our study, we found that distrust in government is not always synonymous with government intrusion concerns. One particular configuration shows that perceived information transparency and trust in government are absent, but users are not concerned about government intrusion and surveillance and still perceive the benefit of social empowerment. This configuration echoes the discourse of privacy versus security in which the surveillance concern is non-existent because the surveillance itself is

considered to bring a significantly positive impact to society (Lyon, 2012). Dinev et al. (2008) further suggested that it is all about raising awareness of why surveillance and intrusion are necessary. Further interpretation of this configuration comes from the study by Kehr et al. (2015), who found that when assessing information disclosure and privacy, users can be affected by a temporary affective state where the benefits of information disclosure bear more significance than the perceived risks. In our case, social empowerment is one of the strong forces that steers the behavioural intention when there is neither trust nor transparency.

The prominence of a privacy calculus framework

The results from our study show that social empowerment and perceived privacy risks (either the presence or absence of these risks) have a prominent role in encouraging the download intention. Using fsQCA, our study presents the role of social empowerment and perceived privacy risks in influencing the download intention, in a different light. For instance, we found that even when there is no trust in government, the presence of social empowerment and the absence of perceived privacy risks can lead to the expected outcome of download intention. This finding resonates with the general idea that perceived benefits positively influence information disclosure and perceived privacy risks negatively influence information disclosure (Y. Li, 2012).

Our findings also show that combined with the absence of government intrusion concern, the presence of social empowerment and the absence of perceived privacy risks also lead to the presence of download intention. Although different archetypes of consumers may have different attitudes towards surveillance, generally the absence of intrusion or surveillance concern further encourages individuals to have positive attitudes when they can experience benefits without suffering from any risks (Plangger & Montecchi, 2020). This strengthens the argument from Chang et al. (2018), where privacy concerns and privacy risks correspond with each other, and the argument from Miltgen and Smith (2015), where rewards and benefits reduce concerns over privacy risks.

Social empowerment also has a prominent role in shaping the configurations that lead to the presence of download intention. As a single construct, empowerment can be a strong psychological force to encourage users' proactive participation (Z. Li, 2016). That argument is well represented within our findings, where feeling socially empowered from contributing to society, by simply downloading a contact tracing app, is crucial. Marketing scholars have also seen the role of customer empowerment strategies, where firms encourage customers to proactively get involved at various levels with their marketing objectives in creating positive values (Acar & Puntoni, 2016). Empowerment also signifies that customers recognise the values of their active participation in creating differences in organisational performance (Auh et al., 2019). Our findings provide a nuanced understanding of how emphasising the empowerment and values created from adopting the app can positively affect the download intention.

Necessary conditions for download intention

Within our 'necessary analysis', we further confirmed the important role of social empowerment to encourage download intention as this benefit is the only construct within our conceptual model that leads to the presence of download intention on its own. This finding suggests that the role of psychological empowerment fosters positive behavioural intentions, in line with existing literature (Singh & Sarkar, 2012). This implies that the communication strategy to encourage the download intention should focus on how the act of downloading and using the app can empower users in their wider contribution towards addressing a public health crisis.

Furthermore, one of the advantages of using fsQCA is its ability to understand asymmetrical relationships between constructs. When we tested the necessary conditions for the absence of download intention, one finding is particularly anomalous. We found that instead of the absence, it is the presence of perceived information transparency that is quasi-necessary to generate the absence of download intention. The potential explanation for this finding is related to what Albu and Flyverbom (2019) and Drucker and Gumpert (2007) suggested. They argued that information transparency can be perceived as a manipulative attempt to gain trust. In their study, Grimmelikhuijsen et al. (2013) further suggested that members of a community, especially those who can be classified as 'transparency pessimists', find that information transparency has little effect on improving trust towards government. Interpreting their findings, we advise that the concept of transparency should be approached cautiously to ensure that the communication strategy is effective and, subsequently, leads to the feeling of trust. Regardless of whether the transparency discourages users due to what they see or due to their perception that the transparency is only an act of disclosing partial and curated information, our finding reveals that it remains possible to suffer negative consequences from being transparent about how the information is collected, used, or managed.

Conclusions

With the COVID-19 pandemic affecting businesses and consumers and the pressure of reopening the economy, the roll-out of a contact tracing app, despite the debate around the significance of its impact, has been paired with social distancing behaviour practices across communities (Kaspar, 2020). This study contributes to the under-researched area of what influences users' intention to download this contact tracing app. In this study, we used a privacy calculus framework (with social empowerment as its perceived benefit), perceived information transparency and control, and attitudes towards government within our conceptual model. In addition, employing fsQCA in our study has enabled causal asymmetrical relationships to be analysed and presented. This study presents specific sufficient and necessary configurations, involving several reversible constructs (i.e. from a presence to an absence of a condition and vice versa), that can generate the presence or absence of download intention. Furthermore, we found that perceived information transparency has a conflicting impact on influencing the download intention, depending upon the configurations. The findings have also shown the crucial role of social empowerment in influencing users to download the contact tracing app during the COVID-19 crisis.

Theoretical contributions

The theoretical contributions of our study are three-fold. First, displaying the flexibility of a privacy calculus framework, this study employed fsQCA to reveal that social empowerment and perceived privacy risks (either their presence or absence) can work individually or collectively with other constructs in creating sufficient and necessary conditions in influencing download intention. Hence, our study enhances the flexibility of a privacy calculus framework in addressing context-specific privacy research related to the intention to download an app; adding to a pool of studies regarding the application of a privacy calculus framework (Chen, 2018; Dienlin & Metzger, 2016; Ozturk et al., 2017). Considering that privacy is context-dependent (Epstein, 2017), this study further increases the empirical evidence of the flexibility of a privacy calculus framework in helping scholars to understand what influences the download intention of a contact tracing app during a crisis such as the COVID-19 pandemic.

Second, as we adopted social empowerment into the privacy calculus framework, we added an empirical discussion of how social empowerment influences technology adoption under unprecedented circumstances. To date, specific research related to the role of social empowerment in marketing literature is limited (Hanson & Yuan, 2018), and considering the importance of consumers' willingness to use mobile health applications (Ali et al., 2018) our study provides clarity not only on the contextual use of social empowerment for a contact tracing app, but also on its psychological significance to understand users' intention to download a mobile health app that collects sensitive personal information.

Furthermore, in complementing social distancing practice and other preventive behaviours, technological support is one potential instrument that should not be dismissed (Walrave et al., 2020). To mitigate the possibility of others' reckless behaviours during the pandemic, users obtain a sense of solidarity and altruism from using the app in combatting the pandemic. Kaspar (2020) suggested that the use of the app is driven by the lack of trust towards other people's affinity and solidarity to adhere to recommended preventive measures. As solidarity is a relevant aspect in curbing the pandemic (Cheng et al., 2020), the benefit of social empowerment provides a novel insight into why individuals download the app to complement the social distancing and other prevalent public health measures.

In the era of digital technology and big data, our empirical insights are pertinent to influence strategic and marketing decisions in data-driven organisations that collect their customers' personal information (Kumar et al., 2013). Regarding data collection and information disclosure, understanding the interwoven relationships amidst privacy, information transparency and control, and trust, is imperative (Robin et al., 2021). Hence, with fsQCA, our third contribution relates to how our study also expands existing literature on perceived information control and transparency, and whether their absence and/or presence can affect behavioural intentions regarding download intention. We confirmed the incongruous role of perceived information transparency, in which the presence or absence of this construct can positively or negatively affect behavioural intentions. Additionally, our fsQCA results also contribute to how we understand the role of trust in government and their surveillance activities. Causal asymmetrical relationships from fsQCA lend insights into how scholars understand various combinations of constructs that affect relationships with

the government regarding the issues of privacy and surveillance. Taking into consideration the increasing use of surveillance for societal benefits (Bromberg et al., 2020), our conceptual model and findings add significant value to the literature.

Managerial implications

The disruptive impact of COVID-19 on businesses and consumers is monumental. One of the most notable suggestions to help reducing the sociological impacts of the disruption is to practice social distancing (Glass et al., 2006). However, scholars from medical sciences also recommended the use of a contact tracing app to complement the social distancing practice to tackle the pandemic (Firth et al., 2020; Kaspar, 2020; Pagliari, 2020; Rizzo, 2020). Our study emphasises the sufficient and necessary conditions to encourage the download of the contact tracing app and thus support the government in tackling the pandemic. The effective use of a downloaded contact tracing app complements the social distancing practice to increase the level of assurance that businesses and consumers can resume their essential activities. Furthermore, our findings can provide insights into the intention to download other non-profit emergency services applications such as 'what3words' and the Federal Emergency Management Agency (FEMA) app.

Our study presents configurations of conditions that can help healthcare authorities, policymakers, and the government to reassure users to download the contact tracing app. The effectiveness of the contact tracing app depends on various factors, but 'in places, where we can ensure viability, app-assisted tracing can be necessary elements of reopening countries' (Sapiezynski et al., 2020, p. 2). Regarding the download intention of an app, which requests sensitive information and can trigger privacy and surveillance concerns, communication strategies to ensure messages are better understood are important (Becker et al., 2014). Our study provides managers with insights such as the importance of highlighting social empowerment, and prudence when claiming to be transparent in order to structure more effective communication strategies. Therefore, with sufficient data on attitudes towards government, the privacy of information, and social empowerment, practitioners can decide and adjust their best practice in effectively engaging with the public and thus encourage a higher level of positive behavioural intention.

Finally, another takeaway from this study for organisational practice is the intricacy behind communication transparency. Organisations should be aware that the provision of information regarding data collection and privacy does not exclusively equate to transparency (Rawlins, 2008). If the communication from organisations is perceived to be pseudo-transparent, an attempt to be transparent can result in unfavourable outcomes such as distrust or other negative behavioural intentions. Instead, communication transparency, especially during a public health crisis, should include accountability, relevancy, accuracy, and timeliness (Lee & Li, 2021; Rawlins, 2008).

Future research and limitations

There are several limitations regarding the results of this study. First, this study employed a cross-sectional design with a purposive snowball sampling method. Whilst it provides a significant snapshot of relevant cases, the generalisability is limited, and it may be affected by rapid changes and the development of the COVID-19 pandemic. Another limitation

considers the possibility of bias due to the participants' predeveloped opinion about the implementation of a contact tracing app (Bradshaw et al., 2020). Hence, the generalisability of the results should be treated cautiously. Future studies can address this by further refining the criteria used for sample characteristics and by using a random sampling design.

Second, even though this study employed fsQCA that reveals important causal asymmetrical relationships within our conceptual model and contributes to how we understand what influences intention to download contact tracing app, adopting a quantitative study that allows rigorous validity and reliability measures of regression analysis can be beneficial to increase the level of the generalisability of the results.

Future research should investigate how social empowerment and other constructs within our conceptual model affect the behavioural intentions of users in other countries, as Chopdar et al. (2018) suggested that cultural influences can be significant in affecting technology adoption. For example, scepticism and fears about potential negative impacts influenced Arab respondents in adopting health measures to tackle the COVID-19 pandemic (Qunaibi et al., 2021). Future research should also examine other nuanced factors such as technology self-efficacy and infrastructure support in affecting the download intention of a contact tracing app, as they can be important in this specific area of research (Sapiezynski et al., 2020).

Note

1. NHS, which stands for National Health Service, is the healthcare system accessible to everyone living in the UK

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix.

Items
Government Intrusion Concern (GIC)
(1) I am concerned about the power the government has to wiretap Internet activities.
(2) I am concerned that my Internet accounts and database information (e.g. emails, shopping records, tracking my Internet surfing, etc.) will be more open to government/business scrutiny.
(3) I am concerned about the government's ability to monitor Internet activities.

Perceived Information Transparency (TRP)
(1) Whether the government will allow me to find out what information about me they keep in their databases is important.
(2) Whether the government tells me how long they will retain information they collect from me is important.
(3) The purpose for which the government wants to collect information from me is important.
(4) Whether the government is going to use the information they collect from me in a way that will identify me is important.

Perceived Information Control (PIC)
(1) I believe I have control over who can get access to my personal information collected by the app.
(2) I think I have control over what personal information is released by the app.
(3) I believe I have control over how personal information is used by the app.
(4) I believe I can control my personal information provided to the app.

Perceived Privacy Risks (PPR)
(1) It would be risky to give personal information to the app.
(2) There would be high potential for privacy loss associated with giving personal information to the app.
(3) Personal information could be inappropriately used by using the app.
(4) Providing the app with my personal information could involve many unexpected problems.

Trust in Government (TG)
(1) The government is open and receptive to the needs of its citizens.
(2) The government makes good-faith efforts to address most citizens' concerns.
(3) The government is honest in its dealings with me.
(4) The government keeps its commitments to its citizens.
(5) The government is trustworthy.

Social Empowerment (SE)
(1) I feel like I'm making a positive impact for someone else.
(2) I feel like I'm making a meaningful difference for another person.

(3) I feel that my action made a positive difference in another person's life.
(4) My actions made another's life better. I had a positive impact on others.

Download Intention (DI)

(1) I am _____ to download the app.
(2) After reading the related information of the app, I am _____ to try the app.
(3) After reading the related information of the app, I am _____ to consider the app as a preferred app to download.

Descriptive Statistics (N = 180)

Variable	Mean	Std. Dev.	Minimum	Maximum
GIC_cal	0.5567222	0.3215239	0.05	0.95
TRP_cal	0.6531111	0.2861047	0.05	0.95
PIC_cal	0.4011667	0.3054601	0.05	0.95
PPR_cal	0.5842222	0.2971437	0.05	0.95
TG_cal	0.3727778	0.3106535	0.05	0.95
SE_cal	0.5175000	0.3113695	0.05	0.95
DI_cal	0.5218333	0.3421557	0.05	0.95