

Assessing Trust in Online Collaboration in E-government during the COVID-19 pandemic: An Employee Perspective

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Abstract

Due to the outbreak of the COVID-19 pandemic, firms and institutions have to shift to work from home to prevent the spreading of the pandemic. As a public sector, employees in government institutions also collaborate online during the lockdown. Collaboration online has been identified as a challenge for employees. While our understanding of how employees' perception and trust of the e-government is still limited. To address this research gap, this study intends to investigate the antecedents of employees' trust in e-government during their work process in the new normal. By conducting a qualitative study with 14 in-depth interviews with employees with e-government experience during the COVID-19 pandemic, we extracted several key antecedents of employees' trust in e-government. Based on the qualitative data analysis, a theoretical model of trust antecedents was proposed. Our study provides a deep understanding of the specific antecedents of employees' trust in the e-government context.

1. Introduction

The outbreak of the COVID-19 pandemic has posed discontinuous disruption to the human life and global society [1]. During the pandemic, several countries declared lockdown and closed the schools, firms, and plants to prevent the widespread of the pandemic. Such kind of protective measures (e.g., social distancing, social isolation) have been identified to be effective in containing the spread of COVID-19 [2]. As the firms and institutions shift to work-from-home (WFH), people and organizations all over the world have to adjust to the new way of life and work [3]. In the government sector, information and communication technology (ICT) provides several strengths, such as the increase of transparency, efficiency, and communication [4]. However, little is known about individuals' perception of the online collaboration efficiency in e-government. This new trend and

transformation of the public sector has been a necessity and has attracted large attention.

On the one hand, the increase in digitalization in the workplace has brought employees closer together. For example, employees can hold and participant in online meetings remotely at any available time and place. Digital platforms based on ICT can provide several choices to conduct online meetings and collaborations. However, on the other hand, WFH has also pushed individuals further apart. For example, older individuals with little internet experience will find it hard to work online, even feeling a sense of digital divide. Moreover, collaboration or working online may also face with frequent information interruption and communication barriers, which may negatively impact individuals' work efficiency [5]. Due to the unfamiliarity with the online platforms for many employees, trust can also be a barrier in the success implementation of the e-government website. With the ubiquitous of ICT in the workplace in the "new normal", there is a call for deep understanding of individuals' perceived benefits of online collaboration via the websites. To address the above issues, we pursue the following research question in this study:

Research question: What are the antecedents of employee' trust in the e-government website?

To answer the research question, we first introduce the existing literature on trust in the e-government website, collaboration in the workplace. Then we conducted a qualitative study with 14 e-government website users during the pandemic to understand the phenomenon in this research context. Qualitative data was collected with 14 in-depth semi-structured interviews. A qualitative data analysis procedure with three rounds of coding was also conducted. Then after iterating between existing research and the results of the qualitative data analysis, we draw conclusions on the antecedents of employees' trust and perceived net benefits of the e-government website during the COVID-19 pandemic.

The structure of this paper is as follows. In the next section, we present the research background and literature review of relevant studies. Next, we present the procedure of the qualitative data analysis and explained the results. Finally, we conclude with the summary of the findings and proposed a theoretical framework. Future research direction is also discussed.

2. Literature review

2.1. E-government platform quality

Information quality, system quality, and service quality are the three most frequently discussed antecedents of successful implementation of information technology [6]–[8]. In particular, in this research context, information quality refers to the information and context provided on the e-government website [8]. System quality refers to the individuals' perception of the technique performance of the e-government website, such as information delivery and user-friendly arrangement [7]. Service quality includes the overall quality of the service delivered by the government [9].

Despite abundant research on users' perceived e-government quality, these studies mainly focus on the antecedents from the citizens' perspective. However, as the two-sided nature of the online platform, employees are also users of the e-government platform. Employees' perception of the quality of the platform also plays an essential role in the successful implementation of the e-government platform. Therefore, this study focuses on the investigation into employees' perceived quality of the e-government platform during the collaboration. Moreover, as the employees mainly use the e-government system to complete online collaboration during their work process, communication quality is essential during the collaboration [10], [11]. Therefore, we included the communication quality in this study.

2.2. Trust in e-government

Existing research on trust in e-government has been conducted from several perspectives, such as the antecedents of trust in e-government, the consequences of trust in e-government [12]–[14]. For example, trust has been identified to have a positive effect on citizens' usage of the e-government platform [13]. Trust is also essential in the cross-boundary e-government systems and can increase the team performance [15]. During the online collaboration in the COVID-19 period, it is important to understand employees' trust in e-government.

Regarding the antecedents of individuals' trust in e-government, studies argue that perceived security, privacy, ease of use, and information quality are potential determinants of individuals' trust in using social media for e-government service [16]. In this study, we mainly focus on the investigation into antecedents of employees' trust in e-government.

3. Qualitative data analysis

To answer the research question and have a deep understanding of the antecedents of employees' trust in the collaboration in e-government, we conducted a qualitative study in this research. The qualitative study was based on 14 in-depth semi-structured interviews. The respondents were those who had had online collaboration experience during the pandemic in the government sector. Specifically, each interview lasted for about 20 minutes on average. The interviews were conducted face to face or via the online social media, leading to a 100 percent response rate. We recorded the interviews and transcribed into manuscripts as soon as the interviews finished. Interview protocols include several questions about individuals' perception of the online collaboration in their working process during the lockdown. Open-ended questions were also included. Two scholars in our research group coded the qualitative data. Following the instructions on conducting the inductive research, we iterated between the theoretical background and the qualitative data to draw conclusions. We followed a traceable, iterative, and coherent coding process [17]. The three rounds of the coding process of the qualitative data are presented in Table 1.

In the first round of the coding, we analyzed the manuscripts line by line and marked the essential quotes that are related with this research topic with "PX". In particular, the participants mentioned their ideas or perspectives when collaborating with the online platforms or websites during their work process. Then we noticed several themes and extracted the representative illustrative quotes in the table.

In the second round of the coding process, we focused on extracting the similar themes and categories. Based on the illustrative quotes in the first round, we identified and defined the similar themes derived from the illustrative quotes. This round of coding process yielded in total seven categories, such as ease of use, usefulness, traceable, privacy risks, communication efficiency, communication transparency, and their trust in e-government. The second order categories are marked with "AX".

In the third round of the coding process, we paid more attention to the several emergent core categories of employees' perceptions of online collaboration in the

government sector. Specifically, we noticed individuals' focus on the quality of the e-government system, quality of communication. Thus, we identified three core categories in this process, such as e-government system quality, communication quality, and trust in e-

government. The third order categories are marked with "AAX".

Table 1. Three rounds of the coding process

Illustrative quotes	Second order categories	Third order categories
The operation (of the system) is relatively easy and simple, especially for individuals in our age. Generally, there is not a lot of trouble on the operation of this system. (P4)	A1 Ease of use	
The operation of the system is quite easy for me. And our company has a requirement that everyone must be able to use it, otherwise they can't finish their work. (P11)		
There are times when we can't meet or sit together on holidays or during urgent meetings. In those situations, software provides great convenience for us. (P9)	A2 Usefulness	AA1 E-government system quality
The advantage of the system is that instant communication is very convenient. It can carry on the transmission of voice and video stream and can support online documents and online information processing. (P7)		
When collaborating online, each step leaves a trace, or even in the form of a document. Sometimes it's easy to forget things, but online meetings can provide the function of electronic memos and electronic calendars, which will remind you not to forget. (P1)	A3 Traceable	
Online systems leave a trail. For example, if you're late for a meeting, you can still see the notes of other people. (P5)		
Personal information leakage is indeed quite serious, we do not know whether it will lead to information leakage through this way, I guess there may be a large extent. (P2)	A4 Privacy risks	
The biggest risk is privacy leak and the information confidentiality is not strong enough. (P5)		
If you do not use the private and encrypted network, you will be at the risk of privacy disclosure. (P7)		
By using video conferencing and other similar systems, we can improve our efficiency, and at the same time can greatly reduce the turnover of staff, reduce some unnecessary waste of time and resources. (P7)	A5 Communication efficiency	AA2 Communication quality
I feel more free when using the online system. It can also can save our travel time. Communication may be also easier. (P1)		
Online communication is not smooth enough, and the communication between members is not deep enough. (P10)	A6 Communication transparency	
The advantage of online communication is that the information is transparent, and then you can intuitively know your work tasks. Online communication is relatively efficient. (P1)		
Online communication enables the real-time online editing and transmission of files. We can also know the opinions of colleagues in real time. (P5)		
After the epidemic, we used the online platforms more often, and I trusted them more. Before the epidemic, people in my age group had not been very comfortable using the software. (P4)	A7 Trust in e-government	AA3 Trust in e-government

I trust the system more during the usage. (P6)

I think it is still more trust in the software, although there will be some problems in the use, but will continue to improve. (P8)

4. Research model and propositions

According to the results of the qualitative data analysis, we iterated between the existing research and results of the data analysis. Then we develop several propositions that link the relationship between different antecedents and employees' perceived trust in e-government.

4.1. Antecedents of system quality

According to the qualitative study analysis, we extracted several constructs that determinants employees' perceived e-government system quality, including ease of use, usefulness, traceable, and perceived privacy risks.

Technology acceptance model (TAM) is one of the most widely applied theory of user acceptance and usage [18]–[20]. TAM suggested two specific features that determines individuals' perception of using the technology, which are ease of use and usefulness. As can be inferred in the e-government context, ease of use has also been identified to have an impact on users' perception of the e-government platform [13], [21]. As one of the participants of our qualitative study noted, *"The operation (of the system) is relatively easy and simple, especially for individuals in our age. Generally, there is not a lot of trouble on the operation of this system. (P4)"*. Usefulness has also been identified as a primary antecedent of e-government usage [22], [23]. One of the participants also argued that, *"There are times when we can't meet or sit together on holidays or during urgent meetings. In those situations, software provides great convenience for us. (P9)"*.

Therefore, we pursue the following propositions:

Proposition 1: Ease of use is positively related with employees' perceived quality of the e-government platform.

Proposition 2: Usefulness is positively related with employees' perceived quality of the e-government platform.

Traceable refers to the function that the system can trace back the behavior or record of other employees [24], [25]. Unlike previous face-to-face collaboration between the employees, collaboration online requires more transparent information exchange, which are

accurate, traceable, and fast [26]. As one of our participants in the qualitative study argued, *"When collaborating online, each step leaves a trace, or even in the form of a document. Sometimes it's easy to forget things, but online meetings can provide the function of electronic memos and electronic calendars, which will remind you not to forget. (P1)"*

Therefore, we propose the following proposition:

Proposition 3: Traceable is positively related with employees' perceived quality of the e-government platform.

Privacy risks reveal the possibility of losing personal information or important documents via the online platform [27]. Individuals find it important to have the ability to monitor the disclosure or use of their personal information [16]. Perceived high level of privacy risks will inhibit individuals' willingness to share their information on the platform, thus have a negative impact on their perceived quality of the online system. As one of the interviewees stated, *"Personal information leakage is indeed quite serious, we do not know whether it will lead to information leakage through this way, I guess there may be a large extent. (P2)"*. We proposed the following proposition:

Proposition 4: Perceived privacy risks of the platform is negatively related with employees' perceived quality of the e-government platform.

4.2. Antecedents of communication quality

Communication quality reveals several essential features of the communication, including timely, accurate, adequate, credible, and complete [10][11][28], [29]. Effective communication between employees plays a key role at work, especially when working online [29]. In particular, the efficiency of communication or task discussion accounts for the overall communication quality. One of the interviewees in the qualitative study noted that, *"By using video conferencing and other similar systems, we can improve our efficiency, and at the same time can greatly reduce the turnover of staff, reduce some unnecessary waste of time and resources. (P7)"*.

Thus, the following proposition is proposed:

Proposition 5: Communication efficiency is positively related with employees’ perceived communication quality.

Existing research has discussed the impact of communication openness in successful communication. Specifically, communication openness is defined as “the willingness to be receptive to the communication experience” [30]. Transparency and openness are the degree that a group member is open to the other members. Digital platforms ensure the communication to be transparent and traceable. One of the interviewees in this study said that “*The advantage of online communication is that the information is transparent, and then you can intuitively know your work tasks. Online communication is relatively efficient. (P1)*”. Thus, we propose that:

Proposition 6: Communication transparency is positively related with employees’ perceived communication quality.

4.3. Effects of system and communication quality on trust

Trust can be referred to as the willingness to be vulnerable to the risks caused by others. According to existing research, system quality depicts the information

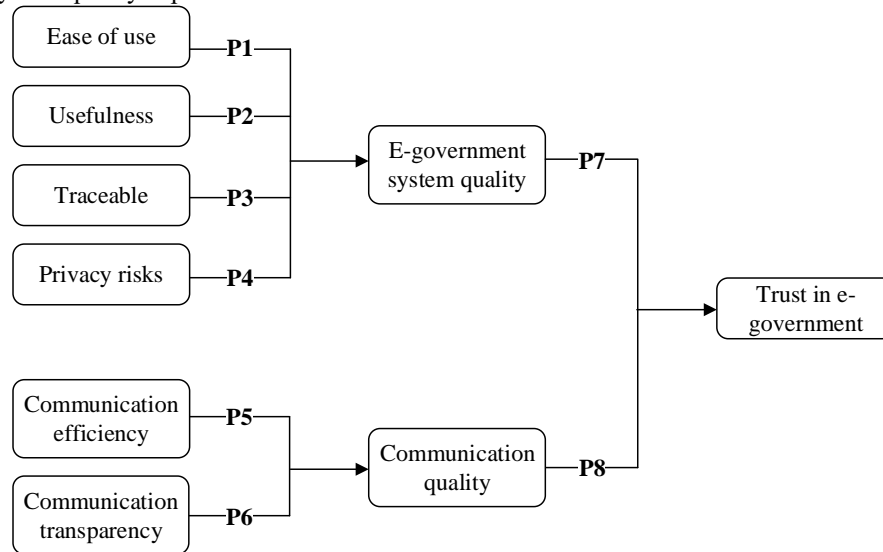


Figure 1. Research model

5. Conclusion and future research

5.1. Conclusion

processing system, which is used to produce a output as the users require [6]. Higher level of overall system quality will definitely increase peoples’ willing to use the system, thus leading to a high level of overall trust.

Therefore, we pursue the following proposition:

Proposition 7: Employees’ perceived e-government system quality is positively related with their trust in e-government.

One of the tenet of trust is that individuals tend to rely on the words, actions, or decisions of others [30]. High-quality communication requires adequate interaction, thus lead the individuals to depend more on each other’s opinions. Therefore, high-quality communication can lead to higher level of trust of individuals. As one of the interviewees said, “*Online communication enables the real-time online editing and transmission of files. We can also know the opinions of colleagues in real time. (P5)*”.

Thus, we propose the following proposition.

Proposition 8: Employees’ perceived communication quality is positively related with their trust in e-government.

The theoretical model of is presented in Figure 1.

Although abundant research has investigated the acceptance and trust perceptions of citizens of the e-government, our understanding of employees’ trust in the e-government website or platform is still limited. As the inevitable trend of working and collaborating online, there is a call for a deep investigation to the employees’ attitude toward the online collaboration

platform during the work process, especially in the government sector. Inspired by the above necessity and research gap in relevant research, we conducted a qualitative study to explore the antecedents of the employees' trust in e-government during WFH. In particular, we draw conclusions on two major perspectives that impact employees' attitude to e-government, which are system quality and communication quality. Specifically, we extracted several specific traits that constitutes employees' perception of the e-government system quality, which includes their perceived ease of use, usefulness, traceable, and privacy risk of the system. From the perspective of communication quality, we also found several antecedents that have an impact on their perceived communication quality, such as their perceived communication efficiency and transparency during collaboration on the online platform. These findings are also consistent with existing research on trust in e-government [13].

5.2. Future work

This study only proposed a theoretical model and several propositions based on the qualitative data analysis in this version. There are several limitations in the current version. For example, we only included the specific antecedents of employees' trust in e-government from two perspectives: system quality and communication quality. Other personality traits (e.g., internet experience, age) which can also have an impact on their trust level of e-government has largely been overlooked. Future research should take the personality features into consideration. In the future research, we will conduct a quantitative study with survey methodology to complement this qualitative study. The participants will be asked to fill in the survey with measurement items about their perceptions during the online collaboration. Propositions will be tested in the future research with quantitative method.

6. References

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