

# Consumer privacy concerns in entrepreneurial contexts: Evidence from an online experiment

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## Abstract

The causal link between customer privacy concerns and organizational nature—specifically, entrepreneurial startups versus mature enterprises—remains unexplored. Using an online experiment, this study examines whether consumers' privacy concerns differ between these two types of organizations. Drawing on protection motivation theory, the study investigates whether customers' privacy concerns are stronger toward entrepreneurial startups than toward mature firms when both declare privacy protection. It further explores whether consumer participation in designing privacy protection mechanisms differently affects consumers' privacy concerns toward start-ups versus mature firms. The empirical results of an online experiment using a sample of 373 college students support the study hypotheses that (i) for unilateral privacy protection declarations, consumers' privacy concerns are higher toward entrepreneurial startups, and (ii) when consumers are invited to participate in designing privacy protection mechanisms, consumers' privacy concerns toward entrepreneurial startups significantly decrease. Our findings complement the literature on consumer privacy defensive behaviors by highlighting that consumer privacy concerns are associated with the organizational nature and privacy protection initiatives.

## 1 | INTRODUCTION

Increasing consumer privacy concerns are hindering online businesses from providing satisfactory products because they need consumer data to do so (Wieringa et al., 2021). Specifically, Caudill and Murphy (2000) found that consumer privacy concerns increase with the growth of the Internet, which further spawns more serious concerns over privacy. Similarly, Xie et al. (2006) reveal that individuals are typically reticent to share personal information or likely to submit incorrect information out of privacy breach concerns, and van Doorn and Hoekstra (2013) document that consumers demand higher control over their personal data in this digital era. Rising consumer privacy concerns are more severe for entrepreneurial startups (newly established firms in the first stage of their operations), mainly because,

compared with established organizations, they lack accumulated data and have a greater need to collect consumer data (Bleier et al., 2020).

The literature has addressed consumer privacy concerns (CPCs) in organizations in general (e.g., Bleier et al., 2020; Culnan & Armstrong, 1999; Malhotra et al., 2004); however, to date, very little empirical research has investigated whether such concerns differ between entrepreneurial and mature enterprises. Presumably, consumers have higher privacy concerns with respect to entrepreneurial startups, trusting them less than they do mature enterprises, despite their privacy protection declarations (Choi & Shepherd, 2005), often attributing a lower cognitive legitimacy to such startups (Shepherd & Zacharakis, 2003). The lack of research on the association between CPCs and entrepreneurial startups hinders a comprehensive recognition of the challenge faced by entrepreneurial startups in this digital era. In addition, detailed research on CPCs and entrepreneurial startups might provide insights on how to tailor specific strategies to mitigate it in these organizations.

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To address the gaps in the literature, this study investigates whether consumers have different levels of CPCs for entrepreneurial startups and established organizations. To examine this issue, other confounding variables must be accounted for, *ceteris paribus*, to focus on the effects of the organizational nature on CPCs. Different types of firms can adopt diverse privacy protection measures, and an effective identification is necessary to assess causal effects.

This study also explores measures to reduce CPCs in both entrepreneurial startups and established businesses. To address this challenge, the origins of CPCs and ways to strengthen customer control over their data are reexamined. To mitigate CPCs, firms often provide unilateral privacy declarations, claiming that they have strict regulations regarding privacy matters (Willis et al., 2021). Drawing on protection motivation theory (Rogers & Prentice-Dunn, 1997), this study proposes that consumers have less trust in the privacy protection declarations of entrepreneurial startups than those of established businesses. Based on this theory, it is conjectured that firms can mitigate CPCs by promoting consumer participation in the privacy protection design. Specifically, in this study, participation in privacy protection refers to consumers' involvement in the design process to determine which types of information are collected, how the data are processed, where the data are stored, and through which channels their data will be used. This type of initiative is particularly effective for entrepreneurial startups, as they are considered more likely to be open about their process.

Empirically, this study uses an online field experiment to investigate whether CPCs differ between entrepreneurial startups and mature enterprises. Specifically, a 2 (entrepreneurial startups vs. mature enterprises)  $\times$  2 (consumer participation in privacy protection: presence vs. non-presence) between-experiments design was applied. Respondents willing to participate in a product trial were recruited and randomly chosen to receive detailed explanations of the trial, with information varying between the provider and privacy protection claim. Participants were asked to self-evaluate their privacy concerns under the different treatments. Their willingness to provide personal emails to receive the invitation to download the product was documented as an indirect reflection of their privacy concerns.

In this study, entrepreneurial startups refer to companies in their nascent stage, meaning that the enterprise is new and has not yet demonstrated legitimacy through its operations; thus, it typically lacks strong stakeholder recognition (Claire et al., 2020; Johnson et al., 2006; Wennekers et al., 2005). By contrast, mature firms have a more comprehensive network system, from management to product sales, and created a stable market position in tandem with their competitive advantages (Beatty & Ulrich, 1991). In the empirical strategy, the identities of the two distinct organizations were manipulated using narratives. An entrepreneurial startup (mature organization) was described as an organization that is newly created and seeking expansion (a subsidiary of a prominent multinational corporate group).

The results reveal that (a) consumers have greater privacy concerns toward entrepreneurial startups than toward mature large-scale

organizations when both provide unilateral declarations of privacy protection, and yet, (b) when consumers participate in designing the privacy protection mechanisms, their concerns significantly decrease, and the decrease is more pronounced for entrepreneurial startups than for mature organizations.

The findings contribute to the literature on the factors influencing CPCs by highlighting the possibility that CPC levels may differ between mature enterprises and entrepreneurial startups that implement the same privacy protection activities. They also contribute to the understanding of where CPCs originate by demonstrating that consumers are not naturally hesitant to provide personal information in exchange for personalized services or products; rather, they are more concerned about losing control of how their information is used. Pragmatically, the findings provide guidance for policymakers looking to implement privacy regulations. Finally, the findings have implications for business practitioners, particularly entrepreneurial startups that attempt to provide individualized services or goods based on consumers' personal information.

The paper proceeds as follows. Section 2 describes the theories and hypotheses development, Section 3 describes the data collection and empirical strategy, Section 4 presents the empirical results, and Section 5 presents the conclusion and recommendations for further research.

## 2 | THEORIES AND HYPOTHESES

### 2.1 | Organizational nature and consumers' privacy concerns

Protection motivation theory (Rogers & Prentice-Dunn, 1997) conceptualizes people's incentive to engage in defensive actions when faced with a threat stimulus. This theory is widely used to understand people's defensive actions against threats originating from natural disasters (Gumasing et al., 2022), hygienic threats (Kim et al., 2022; Wu et al., 2022), and privacy invasion (Mou et al., 2022). This study argues that consumers are particularly concerned about the data that entrepreneurial startups collect from them. Protection motivation theory holds that individuals seek protection if they fear losing control of a situation. Following this logic, it is proposed that consumers' fear of privacy comes from the lack of information on who collects their data and how a firm distributes such data. In practice, consumers purchase products from organizations of different natures—mature organizations that have built their reputation and newly established entrepreneurial startups. Research applying protection motivation theory has not considered this point so far, necessitating an investigation to enhance the theory's applicability to real-life situations; this study argues that this fear can be moderated by the nature of the organization.

Thus, if a mature organization collects the data, then consumers are more likely to believe that their data will be processed according to the privacy protection declaration. Such declarations can mitigate consumers' concerns about how the organization will process and use

their data. Consumers' trust that these declarations will be upheld may vary between mature organizations and entrepreneurial startups because these differ in many aspects. Entrepreneurial startups are new to the business and their survival is uncertain (Johnson et al., 2006). Specifically, consumers' trust in a firm refers to their belief in the firm's competency, benevolence, and integrity (McKnight et al., 2002). In essence, such trust connotes an expectation of trustworthiness. According to game theory, trustworthiness is associated with repeated games (Engle-Warnick & Slonim, 2004). For example, by comparing a seven-time repeated investment game to a one-shot investment game, Cochard et al. (2004) found that overall, participants in repeated games develop stronger mutual trust. In conducting a field trust game as a natural experiment, Xu (2021) found that urbanization increases people's trust in strangers by enhancing their frequency of communication and interactions (i.e., repeated games). Consumers are more likely to accept a company's pledge to respect their privacy if they have faith and confidence in the company's ability to operate sustainably. The unpredictability of entrepreneurial startups may prevent consumers from forming long-lasting trust, as they may question whether repeated games can persist between themselves and these startups (Youssef et al., 2018). In summary, large-scale enterprises can gain consumers' trust more easily through their reputation and influence but consumers may doubt entrepreneurial startups' promises. Based on this discussion, the following hypothesis is proposed.

**H1.** *Consumers have more severe concerns about the legitimacy of privacy protection declarations made by entrepreneurial startups than those made by established firms.*

## 2.2 | The moderating role of consumer participation in the relation between organizational nature and consumer privacy concerns

A declaration of privacy protection promises that the firm will protect consumer privacy, but it is a unilateral guarantee (Choi & Jerath, 2022). One effective way to manage uncertainty is to enhance stakeholder participation. For example, Newig et al. (2005) identified the importance of public participation in managing uncertainty in the implementation of infrastructure projects. To build a guarantee, organizations can invite consumers to participate in the privacy protection design process. Studies on person-object relationships show that consumers form a strong attachment to the products they help develop (Pierce et al., 2003). This study proposes that privacy protection initiatives can be introduced through product design. If people invested efforts in the design and development of a product, they would make a higher evaluation of the product and trust it. In other words, consumer participation enhances consumers' control and sense of empowerment regarding privacy protection (Wathieu et al., 2002). Recent research has demonstrated that when empowered, consumers' defensive behavior toward customization might be successfully moderated (e.g., Bandara et al., 2021; Han & Broniarczyk, 2022; Mishra

et al., 2021). However, although firms claim that they invite consumers to participate in customizing privacy protection, consumers may still evaluate the reliability of such a claim. Consumers might think that a mature enterprise would not be open about its developmental processes, believing that these organizations impose strict regulations on various types of processes. By contrast, consumers might find the declaration of consumer participation made by entrepreneurial startups more convincing. Therefore, the following hypotheses are proposed.

**H2a.** *Consumer participation in privacy protection can mitigate privacy concerns in an entrepreneurial context.*

**H2b.** *The negative effect of consumer participation in designing privacy protection mechanisms on their privacy concerns is more pronounced for entrepreneurial startups than for mature organizations.*

## 3 | METHOD

An experimental approach was applied to test the study hypotheses. Such an approach is particularly advantageous in identifying causal relations between variables and has been broadly exploited by scholars of consumer behavior (e.g., Antonides et al., 2002; Bergquist et al., 2020; Bi et al., 2012; Liu & Xu, 2021).

### 3.1 | Sample

The experiments were conducted in Nanjing, China. Students were invited using a student email list at a Chinese university with 30,000 students. Among those who expressed their preliminary intentions, 400 Chinese students were recruited to participate in the product trials. These 400 students were randomly classified into four groups, each comprising 100 participants and receiving different sets of instructions. Finally, 373 valid responses were collected.

### 3.2 | Experimental stages

The study experiment comprised three stages as described below.

1. The recruiting stage: Invitations to participate in a product trial were sent to a student pool using a university email system. In the first part of the invitation, students were told that the trial would last for less than 30 min and that some of them could win a reward of approximately 50 yuan.
2. The instruction stage: In the second part of the invitation, the product trial was explained to the participants. The invitations varied according to the treatment. There were four types of invitations, whereby a 2 (entrepreneurial startups vs. mature enterprises)  $\times$  2 (consumer participation in privacy protection:

presence vs. non-presence) experiment was designed. The participants were randomly distributed into four groups, each of which received a different set of instructions. After reading the instructions, participants were asked to agree to join the formal product trial. Upon their agreement, they were asked to provide a personal email. The different instruction sets are described below.

In the experiment, the nature of providers (mature organizations versus entrepreneurial startups) was manipulated by claiming that the products for trial belonged to the development team of a global firm or a newly established entrepreneurial firm. The types of privacy protection initiatives were also manipulated by providing different descriptions of the initiatives. For a unilateral declaration, the protection of data was described as strictly obeying international data regulations (Dommeyer & Gross, 2003). Regarding consumer participation initiatives, the participants were invited to design and develop the data-processing method. In other words, consumers were asked to customize their own information processing method, including the specific information that can be collected (Tiu Wright et al., 2006), where the information should be stored—on their mobile device or the firm's servers (Pires et al., 2006), and the conditions under which the information can be processed (Füller et al., 2009). Therefore, in the product trial, the data collection process for the products was designed by the consumers themselves.

- The explanation stage: In the last stage, emails were sent to all students, explaining that the whole process was an experiment and that there would not be an actual product trial. The participants were then acknowledged and 20 of them were randomly chosen to each receive approximately \$8 for their participation. Students also received some rewards.

### 3.3 | Variables

#### 3.3.1 | Dependent variable

The participants self-evaluated their privacy concerns under different treatments using a rating that ranged from 1 to 5—the larger the value, the higher the privacy concerns. The agreement ratio was also used as a proxy for participants' privacy concerns. The rationale was as follows. First, the participants were asked to leave their personal emails for receiving the product. This action was not equivalent to the actual product trial. The participants expressed their willingness to receive the instructions, and after overcoming some hesitation, they were willing to use the product. Second, after completing the experiment, 15 participants who chose not to continue the trial were interviewed to find out their reasons for discontinuing the trial. Fourteen answered that it was because of privacy concerns, and one said that he found the trial uncomfortable but did not give specific reasons. This information proved that our manipulation was successful for the majority of the participants. The reason for refusing to continue participation in the trial was privacy concerns; thus, the increased

**TABLE 1** Instructions distributed to participants

	Nature of product provider	Privacy protection
Instruction 1	Mature organizations	Unilateral declaration
Instruction 2	Entrepreneurial start-ups	Unilateral declaration
Instruction 3	Mature organizations	Consumer participation
Instruction 4	Entrepreneurial start-ups	Consumer participation

agreement ratio reflected the decreased privacy concerns under certain treatments.

#### 3.3.2 | Independent variable

The independent variables used in Table 1 were organizational nature (mature organizations vs. entrepreneurial startups) and privacy protection initiatives (unilateral declaration in privacy protection versus consumer participation in privacy protection).

#### 3.3.3 | Control variables

Following previous studies (Lwin et al., 2007; Phelps et al., 2000; Zhang et al., 2013), the students' demographic factors were added as control variables. Age is a continuous variable indicating the age of the students; education is a continuous variable representing the total number of years of education received by the students to date; gender is a dummy variable that equals one for female participants and zero for male participants; and economics is a dummy variable that equals one if the majority of the participants are economics or business majors and zero otherwise.

## 4 | RESULTS

### 4.1 | Descriptive statistics

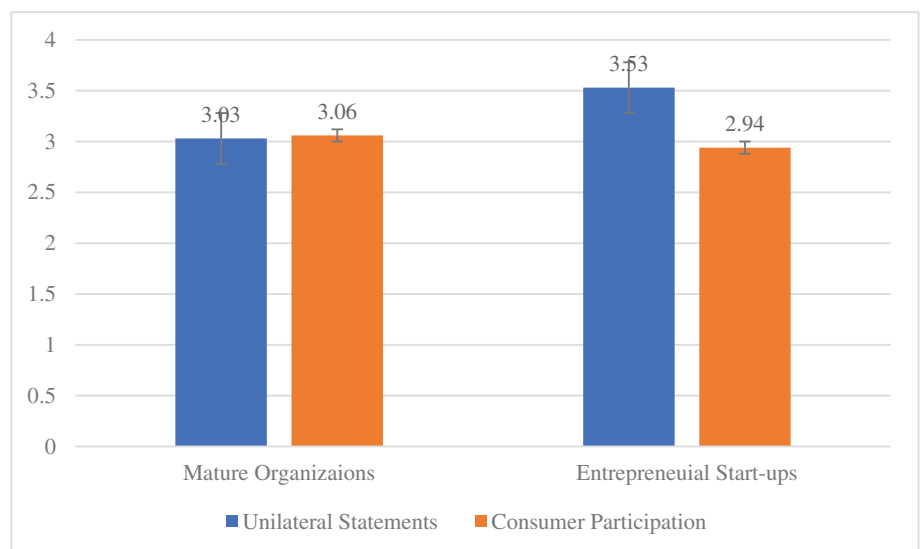
In total, 373 valid responses were obtained. The descriptive statistics of the participants' demographic variables across different sets of instructions are presented in Table 2.

The data in Table 2 for *t*-tests of the variables, age, years of education, female ratio, and economic ratio, across different treatments show that these were not significantly different. For panel A, 100 valid responses were received. Participants received invitations from organizations that provided privacy protection through unilateral declarations that consumer privacy will be strictly respected in accordance with international rules. They rated their concerns about privacy at 3.03.

Meanwhile, participants in Panel B received invitations from mature enterprises to join in customizing the data processing. A shift in consumer privacy concerns to 3.06 was observed, suggesting that members did not respond that much differently to the various privacy protection initiatives implemented by mature organizations.

**TABLE 2** Descriptive statistics of participants

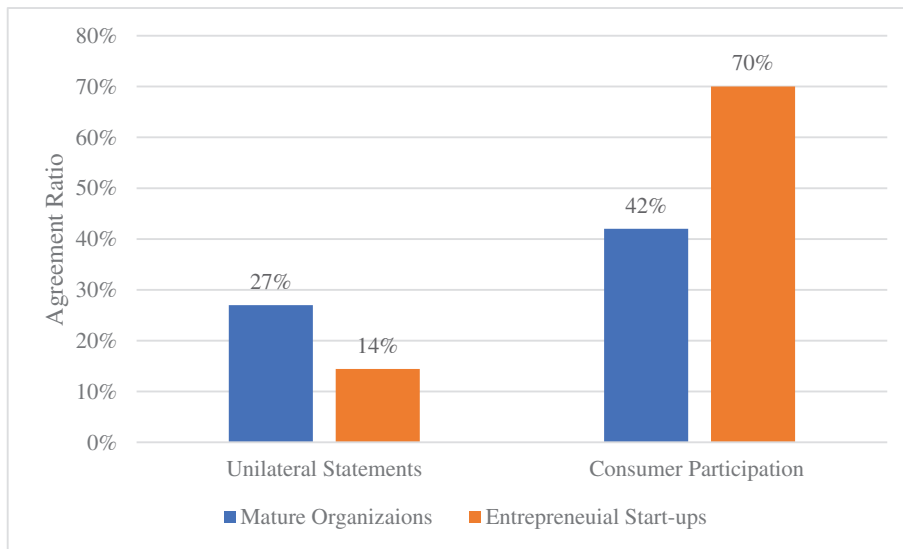
Variables	Age	Education years	Female ratio	Economics ratio	Level of privacy concerns	Agreement ratio
Panel A: Instructions with mature organizations and unilateral declarations						
Mean	20.63	14.05	39%	57%	3.03	27%
SD	2.08	0.81			1.35	
N	100	100	100	100		100
Panel B: Instructions with entrepreneurial start-ups and unilateral declarations						
Mean	20.55	14.02	50%	67%	3.53	14%
SD	1.97	0.83			1.31	
N	97	97	97	97		97
Panel C: Instructions with mature organizations and consumer participation						
Mean	20.78	14.07	56%	43%	3.06	42%
SD	1.73	0.82			1.4	
N	78	78	78	78		78
Panel D: Instructions with entrepreneurial start-ups and consumer participation						
Mean	21.18	14.01	59%	54%	2.94	70%
SD	1.88	0.79			1.35	
N	94					

**FIGURE 1** Privacy concerns across different instructions [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

The demographic results of individuals who received invitations to participate in a product trial from manipulated entrepreneurial startups are presented in panels C and D. The participants in panel C were informed that entrepreneurial startups would safeguard their privacy by adhering to international privacy rules. Participants evaluated their privacy concerns at 3.53, a higher rating than that in panel A. Privacy concerns declined to 2.94 when the entrepreneurial startup invited participants to engage in the customization of personal data processing.

A boxplot of privacy concerns across participant groups with different privacy concerns is presented in Figure 1. It shows that for unilateral privacy protection declarations, consumers were more

concerned about the entrepreneurial startups' declaration than that of mature organizations ( $p < 0.01$ ). Meanwhile, when both types of organizations invited consumers to participate in the privacy protection design process, CPCs toward entrepreneurial start-ups decreased significantly ( $p < 0.01$ ). However, this initiative did not produce significant effects on CPCs toward mature organizations ( $p > 0.1$ ). Thus, both H1 and H2 are validated. Notably, participants did not respond significantly differently to the two types of privacy protection initiatives provided by mature organizations. This might be because they had a higher level of trust in established organizations and believed that their privacy would be protected regardless of the specific protection measures put in place, or because they did not believe they



**FIGURE 2** Agreement ratios to continue product trials across different instructions [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

could actually engage in data processing in established, mature organizations. However, where an entrepreneurial startup invited participants to join in customizing the personal data processing, their privacy concerns decreased significantly. This might be because they lacked trust in the entrepreneurial startups' promise to protect personal data, and their feeling of losing control over their personal data was higher compared with the case of mature organizations, such that when the possibility of their participation was introduced, their feelings of control were enhanced.

Partly as a counterpoint to the dependence on self-assessed privacy concerns, the proportion of consumers who agreed to continue with the trial was also documented. Specifically, after the participants were requested to evaluate their privacy concerns, they were asked about their willingness to continue with the product trial. When they agreed, they were asked to leave a personal mailbox in the download link. The results show that respondents' agreement rate was negatively associated with their reported privacy concerns, that is, those who were more concerned about their privacy were less likely to share their email addresses. Those who refused to continue the trial possibly had reasons other than privacy concerns. Nonetheless, this ratio may provide supplementary evidence indicating that CPCs vary greatly based on the nature of organizations and protection activities. A boxplot of the agreement ratios across participant groups who received different instructions is presented in Figure 2. It shows that for unilateral declarations on privacy protection, participants had a higher agreement ratio for mature organizations, indicating greater privacy concerns toward entrepreneurial startups.

Next, t-tests were conducted on the agreement ratios across participants who received different sets of instructions. The results show that when the same declarations on privacy protection were provided, consumers had significantly greater privacy concerns toward entrepreneurial startups than mature organizations ( $p < 0.01$ ). Thus, H1 is validated.

When participants joined in the privacy protection design process, their privacy concerns significantly decreased in the case of

entrepreneurial startups ( $p < 0.01$ ) but not for mature organizations ( $p > 0.1$ ). Thus, H2a and H2b are validated.

## 5 | DISCUSSION AND CONCLUSIONS

Consumer privacy concerns pose challenges for providers who need to collect their information to provide personalized products and services. This study examines whether consumers have greater privacy concerns toward entrepreneurial startups than mature firms when both provide unilateral declarations of consumer privacy. The results show that (i) when both entrepreneurial startups and mature organizations similarly declared unilateral privacy protection, participants had greater privacy concerns toward entrepreneurial start-ups; and (ii) when both organizations similarly invited participants to join in the privacy protection design process, CPCs toward entrepreneurial startups decreased significantly.

### 5.1 | Theoretical implications

Our study contributes to the research stream on the factors influencing CPCs by highlighting the link between CPCs and organizational nature (mature organizations versus entrepreneurial startups). Prior research has shown that customer privacy concerns may be related to the type of personal information asked for, degree of information control provided, potential repercussions and benefits of information exchange (Nowak & Phelps, 1995; Wang & Petrison, 1993), consumer characteristics (Milne & Boza, 1999; Sheehan & Hoy, 2000), peer relationships (Ozdemir et al., 2017), and privacy awareness (Benamati et al., 2017; Phelps et al., 2001). To the best of our knowledge, no study has explored the relationship between CPCs and the nature of the organization (mature organizations vs. entrepreneurial startups). However, the finding that consumers have greater privacy concerns toward entrepreneurial startups than mature organizations, despite facing the same protection initiatives, is essential for gaining a



comprehensive understanding of how CPCs differ under various contexts and is expected to inspire future research into the origins of CPCs.

Incorporating the theoretical lens of the protective motive theory, our findings further our understanding of the mechanism underlying CPCs. Extant research has revealed that customers are concerned about their personal information being abused and misused to harm them (e.g., Okazaki et al., 2009; Phelps et al., 2000). It appears that in the previous studies, consumers were reluctant to provide personal information. By contrast, this study reveals that customers do not reject disclosing information outright, but are more concerned about losing control of their data. In this digital age, consumers understand that sharing personal information is necessary to receive personalized services (Lee et al., 2011). However, they are concerned about the dishonest use of their data. When they are invited to participate in customizing personal data processing—which increases their control over the data—their privacy concerns are effectively alleviated, as demonstrated in our experiment. This discovery helps in resolving the theoretical paradox that tailored services typically result in increased privacy concerns. Consumers desire individualized services and goods and are prepared to contribute their personal information as long as they have control over the processing of their data (Van Dyke et al., 2007).

## 5.2 | Managerial implications

This study has practical implications for regulators and practitioners. Specifically, the protection of privacy has been a top priority for governing bodies worldwide. Thus, new rules and regulations continue to be issued. For example, the EU General Data Protection Regulation (GDPR), which controls the processing and transfer of the personal data of EU residents, came into effect on May 25, 2018. It is a comprehensive privacy law that applies to industries and businesses of all sizes and types (European Commission, 2022). This study's findings remind regulators to take into account consumer concerns when crafting privacy protection regulations. Not only should regulations punish actions that abuse consumers' personal information but also encourage companies to increase consumer participation and control over their personal data. For practitioners, this study provides an effective strategy to reduce consumer privacy concerns, that is, to promote customer participation in privacy protection. Online providers, particularly entrepreneurial startups, are faced with increased privacy concerns, which make it challenging for them to provide increasingly individualized services and goods. This study's findings suggest that involving customers at every step of the data collection, storage, use, and distribution process is an effective way to reduce CPCs. Doing so will help ambitious startups maintain and expand their business.

## 5.3 | Limitations and future research opportunities

This study has some limitations. First, CPCs were self-reported and partly reflected in the participants' consent to continue the product

trial. Measurement errors may have affected the rigor of the research. More objective and direct measurements of privacy issues are needed to obtain more comprehensive results. A long-term experimental approach may be more effective in future research to investigate alternative consumer privacy measurement techniques. For instance, researchers can conduct field experiments that allow participants to begin product testing while observing their choices and responses. Specifically, future scholars can collect and analyze participants' click-through rates when responding to online providers' offers during the collection of personal information.

Second, although all participants in this study were Chinese students, CPCs can be influenced by numerous contextual factors and circumstances that may influence how consumers perceive and interpret their privacy concerns. For example, there are different levels of privacy protection in living environments. Furthermore, cultural definitions of what constitutes privacy and the deserved level of protection may differ. Future research should test this study's findings in other institutional and cultural contexts by recruiting participants from diverse backgrounds. Under different institutional and cultural settings, scholars can examine the same hypotheses using similar experimental scripts, and investigate whether contextual factors moderate the relationship between CPCs and the nature of an organization.

## ACKNOWLEDGMENT

The experimental design has been pre-registered at <https://osf.io/weruj/>.

## FUNDING INFORMATION

The authors did not receive support from any organization for the submitted work.

## CONFLICT OF INTEREST

The authors have no potential conflicts of interest.

## DATA AVAILABILITY STATEMENT

Research data are not shared.

## ETHICS STATEMENT

This study is approved by the ethical committee of Nanjing University of Posts and Telecommunications, China.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Xu, C., Sun, Y., Wang, J., Yan, H., & Xiong, W. (2023). Consumer privacy concerns in entrepreneurial contexts: Evidence from an online experiment. *Journal of Consumer Behaviour*, 1–9. <https://doi.org/10.1002/cb.2141>