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## The Privacy Paradox in the Data-Driven Marketplace: The Role of Knowledge Deficiency and Psychological Distance

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### Abstract

The current digital marketplace maneuvered by big data lures consumers to disclose information that is private, while they express concern about revealing personal information. The privacy paradox describes the unexpected behavior of people who disclose personal information in spite of being concerned by their privacy. In this paper, we explain the privacy paradox in the data-driven digital marketplace context. We take two related but different routes to expound the privacy paradox. Firstly, using the Theory of Incomplete Information (TII) we argue that, knowledge deficiency of consumers due to incomplete information impedes them to make a rational decision. Secondly, using the Construal Level Theory (CLT) we explain how abstract and psychologically distant privacy values are disparaged over more tangible and psychologically proximal shopping benefits. Our study proposes privacy behavior is not merely an outcome of a trade-off, but a decision process that is influenced by limited knowledge and psychological distance.

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*Keywords:* privacy paradox; data-driven marketplace; knowledge deficiency; psychological distance; big data

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## 1. Introduction

Consumers have become ‘walking data generators’ in the new ecosystem of personal data markets where consumers’ data are incessantly collected, mined, and traded<sup>1</sup>. This zest for consumer data notably increased with the induction of big data analytics. Dawn of big data marks the most striking tech disruption since the introduction of the internet and rise of the digital economy<sup>2</sup>. Terms such as data revolution<sup>3</sup>, datification<sup>4</sup>, dataveillance<sup>5</sup>, and data deluge<sup>3</sup>, seem to enthrall all precincts of the society.

Enhanced by big data analytics, current digital marketplaces entice consumers with highly personalized and effortlessly customized products and services. For instance, Amazon’s automated customer service system delivers prime customer satisfaction and their dynamic pricing system adjusts pricing against competing sites every 15 seconds<sup>20</sup>. However, as all technologies have *dual effects*, data-driven marketplaces are not without negative consequences<sup>6</sup>. Most of the dissensions and arguments on this regard surface from the threats to consumers’ information privacy. Several privacy surveys and studies have found this to be true<sup>7-9</sup>.

However, several scholars have questioned how truly consumers are concerned about their privacy. This is mainly due to the *privacy paradox*; consumers’ pressing privacy concerns are not reflected in their online behavior<sup>8,10</sup>. Several scholars have investigated this particular dichotomy between privacy attitudes and privacy behavior with majority studies emanating from rational cost-benefit theories<sup>11</sup>. Based on behavioral economics and psychology literature we propose a combined effect of *knowledge deficiency* and *psychological distance* to illuminate the privacy paradox.

The problem this paper attempts to answer is; how can knowledge deficiency and psychological distance explain the disparity between privacy concerns and privacy behavior. Our paper is guided mainly by three theories; Privacy Calculus Theory (PCT)<sup>12,13</sup>, Theory of Incomplete Information (TII)<sup>14</sup>, and Construal Level Theory (CLT)<sup>15,16</sup>. Based on the assertions made by aforementioned theories, we provide a theoretical explanation for the emergence of the privacy paradox.

## 2. Literature review

The meteoric growth of the internet and emergence of ubiquitous and pervasive technologies have enabled the businesses to collect, store, mine, transmit, and trade consumer data at an unprecedented scale<sup>1,17</sup>. At present the question remains; has consumer data become more important to businesses than to consumers themselves? With the commodification of personal data, consumer-generated data have become the strategic capital for businesses in the digital marketplace yielding market intelligence, competitive advantage, and massive revenue<sup>1,18,19</sup>. Steered by its high volume, variety, velocity, veracity and value, big data analytics have magnified the craze for personal data<sup>20,21</sup>. Even though ubiquitous computing and data-driven technologies provide numerous advantages for businesses, they are not without drawbacks. Especially arguments and controversies over the threats to consumer privacy have intensified in the recent years.

Consumers have voiced grave concerns over privacy in surveys, opinion polls, and research. However, consumer behavior in online platforms shows otherwise. This discrepancy between consumer worries over privacy and their actual behavior is widely known as the privacy paradox<sup>11</sup>. This particular quandary has been in the crosshairs of privacy scholars during the past several years in which majority of them have tried to explicate it through economic and social theories. The Privacy Calculus Theory (PCT) based interpretations assert that, consumers conduct a rational calculus of costs and benefits prior to divulging their information<sup>12</sup>. When consumers perceive the benefits are greater than risks, they divulge their information irrespective of the privacy concerns<sup>13</sup>. Social Theory based interpretations in a similar way posit that, consumers have to choose between emotional ties or attachment towards one’s online communities and risks of losing privacy by sharing information<sup>11</sup>. It has been found that social norms<sup>22</sup> and social rewards<sup>23</sup> more often overwhelm consumers to undermine their privacy. Systematic review of privacy paradox literature reveals that, even few in number, some scholars have taken attempts to interpret privacy paradox beyond rational and social based decision making<sup>11</sup>.

Theory of Incomplete Information emerged from the work on game theory by the Noble Laureate John Harsanyi<sup>14</sup>. This theory is based on the assumption that, all parties involved in an action are not equally informed. Therefore, parties involved in a certain action do not know each other’s values, utilities, and rules. In the online

shopping context, general consumers are mostly unaware how their information is used (e.g., data sold to third parties) or even that their information is collected in the first place (e.g., by clickstreams)<sup>24</sup>. This knowledge deficiency impedes consumers to rationally calculate risks and benefits. Research shows that, lack of knowledge in technological and legal protective measures distort the likelihood of privacy violations and leads to miscalculation of future hazards<sup>25</sup>. This leads to undermine risks and prefer more benefits<sup>26</sup>. A major reason for consumers to be influenced by the incomplete information is the *information asymmetries* existing in the digital marketplace. For instance, information asymmetry is highly visible among mobile app providers and customers<sup>11</sup>. Information asymmetries are arguably escalated with the increase use of big data and emergence of personal data markets<sup>1,27</sup>.

Construal Level Theory (CLT)<sup>15,16</sup> is founded upon the reciprocation between psychological distance and construal level. Anything that is not present in the direct-immediate reality can be considered psychologically distant. For instance, any stimulus (e.g., an object or event), which is not experienced by self, happening at some other place, in other time, and less likely to occur are considered psychologically distant. According to CLT, these reasons respectively represent different dimensions of psychological distance: social, spatial, temporal, and hypothetical distance. On the other hand, based on perceived distance, human mind construes stimuli at different levels. CLT studies have found that, higher-level, more abstract, superordinate mental representations are formed for distant objects or events, whereas, more concrete mental representation are formed for psychologically closer things. The relationship between psychological distance and construal level is mutual “more distant objects will be construed at a higher level, and high-level construal will bring to mind more distant objects”<sup>16(pp444)</sup>.

Several assertions and findings of CLT are relevant to this paper. First, moral values and principles are construed at a higher-level due to their abstract and coherent nature<sup>28</sup>. Studies have found that, moral values and ideals are more significant in influencing distant-future intentions and attitudes rather than near-future (or actual) on the spot decision making<sup>29</sup>. CLT further clarifies that, situational and incidental aspects supersede personal values when a behavior is performed<sup>30</sup>. Then the question might arise; are individuals always value-free when taking decisions? CLT-based explanations clarify between two facets of values; central and secondary values. Central values, which are usually higher-construals, have found to guide distant-thinking while secondary values are influential in the immediate here and now situations<sup>28</sup>. Prior to performing a behavior, it is natural that we consider why we do something, the desirability concern and how we do something, the feasibility concern. Studies on the CLT have found that, individuals are more concerned about the feasibility aspect rather than the desirability aspect when an action is performed<sup>31</sup>.

Limited studies have applied the CLT in the online context. Related to our paper, two recent studies in particular are highly relevant. Darke *et al.*<sup>32</sup> found, distrust and hesitance to purchase online are significantly impacted by the spatial distance between online sellers and buyers. Hallam and Zanella<sup>33</sup> reveal that, consumers disparage temporally distant privacy risks over more immediate social networking rewards. These findings are useful to guide the application of multidimensional aspects of psychological distance to explicate the privacy paradox.

### 3. The privacy paradox: The role of knowledge deficiency and psychological distance

Based on the Privacy Calculus Theory<sup>12,13</sup>, it is possible to maintain that consumers engage in a cost-benefit analysis before divulging their information to a seller. Consumers face several potential risks (i.e. costs) by submitting information on the internet. Privacy violations<sup>34</sup>, identity theft<sup>27</sup>, cyberbullying<sup>6</sup> are among many to name a few. Meanwhile, big data enabled tools and technologies provide several gratifying benefits such as highly personalized and customized products, personalized product recommendations, real-time customer service, dynamic pricing, and convenience<sup>20,21,35</sup>. Therefore, consumers are prompted to make a trade-off between the privacy risks and shopping benefits when disclosing information.

But contrary to the contention of PCT of a rational cost-benefit calculus, we argue that consumer decisions and behavior are greatly influenced by knowledge deficiency due to incomplete information. According to the Theory of Incomplete Information, one party should know the strategies and payoffs available to the other party involved<sup>14</sup>. In the data-driven digital marketplace, it is clearly visible that consumers are largely less informed compared to the service providers who dictate the marketplace. Especially, consumers can be knowledgeable about how traditional online shopping worked, but the novelty of big data-driven marketing and other business strategies is still an amusement for the common consumer. Due to limited knowledge about how their information is being collected and

used<sup>24</sup>, and lack of knowledge about protective behaviors<sup>7</sup>, consumers' rationality in decision making is heavily clouded. A rational evaluation of a potential risk requires comprehensive processing of information, when required information is absent, the probability of the potential risk is misjudged and the benefits may overwhelm the decision<sup>25,26</sup>.

The Construal Level Theory<sup>15,16</sup> provides the major contribution in explicating the privacy paradox. Based on CLT, we argue that privacy values and online benefits are construed at different levels. First of all, due to abstract and superordinate nature, privacy as a moral value is construed at a higher level making it psychologically distant<sup>29</sup>. However, values received from online shopping such as personalized products, gratification and convenience are comparatively immediate, tangible, and realistic and therefore appeal to consumers more closely. The remarkable ability of big data tools in delivering such instant and evocative products and services has a significant impact on the level of construal. The *temporal distance* of privacy is comparatively higher compared to immediate benefits<sup>33</sup>. Studies on *optimism bias*, have found consumers tend to think they are at less risk experiencing an adverse experience (i.e. privacy breach) compared to others<sup>36</sup>. This indicates the *social distance* of privacy is higher as consumers tend to relate impacts of privacy risks to others. The *spatial distance* of consumers and online businesses are discussed in the literature<sup>32</sup>. Based on the CLT finding that, spatial distance increases the abstractness of the same object to a higher level<sup>37</sup>. It is possible to state that, abstractness of privacy is multiplied in the online context. The influence of less immediacy, spatial and social distance can lead consumers to think privacy risks are less probable (i.e., hypothetical). When consumers are faced with a value-conflict between privacy and online shopping benefits, we contend that abstract central-values (i.e. privacy) is heavily undermined compared to the secondary values received from gratification and other benefits. Another possible argument is that, although consumers express their concerns over privacy in surveys and research studies (i.e. desirability aspect), the feasibility of protecting their privacy can be tested when it comes to actual online behavior, which to a great extent limited by knowledge deficiency and information asymmetry.

As discussed earlier, incomplete information impedes individuals to rationally calculate the potential risk of privacy. The CLT on the other hand verifies, something is abstractly construed when it is perceived psychologically distant due to lack of information<sup>28</sup>. The link between the two theories indicates that, incomplete information influence privacy to be perceived abstractly in individuals' minds. As contended by the CLT, abstract phenomena such as privacy values guide people's distant thinking, but as the situation gets real, those values seem to lose their relevance and prominence.

Based on the above discussion we come into several conclusions. First, consumers receive benefits and also face risks when shopping online. They weigh the risks and benefits prior to disclosing their information (e.g., for a transaction). Second, we contend that, consumers' evaluation of privacy risks is greatly influenced by knowledge deficiency as a result of incomplete information about data handling practices of service providers and also due to the limited knowledge about privacy protection measures. Therefore, the rational cost-benefit analysis is biased by knowledge deficiency. Third, we explain that estimation of privacy risks and shopping benefits is not purely directed by rational and rule-based thinking. Rather we assert that, such estimation is guided by the level of psychological distance of the values concerned (i.e., privacy vs gratification). Fourth, the impact of big data on consumer privacy is decisive. Big data are distinguished by its ability to be swift and stealthy in dealing with consumer data. Consumers are oblivious about how big data technologies collect and use their data. On the other hand big data have facilitated remarkable benefits to consumers, which have resulted consumers to choose these benefits over the risks such as privacy and security.

#### 4. Discussion and future research agenda

The privacy paradox of online consumers' has become a topic of interest for several privacy scholars. Our effort was to explicate the privacy paradox in the big data-driven digital marketplace environment. We highlight the importance of accounting for the impact of big data in privacy studies, which is very limited in the extant literature. In the same manner, we identify the need of big data studies to account for ethical aspects such as privacy in their investigations. We contribute to the privacy paradox scholarship by expounding it using the Theory of Incomplete Information and Construal Level Theory. Theory of Incomplete Information helps to understand why a rational cost-benefit cannot be performed when consumers are knowledge deficient. The Construal Level Theory illuminates the

privacy paradox by explaining the construal of different values. Literature reveals that consumers are inclined to enjoy the immediate gratifications. On the other hand values such as privacy are found to influence distant-thinking (i.e., intentions and attitudes) but become weaker determinants of real behavior. As such, it explains why consumers express dire concerns about privacy (psychologically distant) and ignore the same values when online activities are performed (psychologically close).

We provide implications for theory and practice. Theoretically, we highlight the importance of identifying factors that can lead to irrational decision making. Especially there has been no attempt taken to explicate the privacy paradox through different aspects of psychological distance. Consumers must be aware that, incomplete information about the privacy risks could harm their judgment of potential risks. They must be well aware about the information practices of the businesses they deal with. Online service providers should be ethical and responsible to reduce the information asymmetry in the marketplace and communicate buyers about the level of privacy in their websites and mobile applications. In an age of big data, policy makers and regulators should highly involve to reduce the information gap and educate the consumers about the importance of privacy.

We limited our investigation of explicating the privacy paradox by only applying CLT and IIT. But future research should look into how other biases and heuristics might change how we perceive privacy. For instance, *immediate gratification bias*<sup>26</sup>, *hyperbolic discounting*<sup>38</sup>, and *bounded rationality*<sup>25</sup> highly correspond to the arguments we made in this paper. Even though the assertions made in this paper are capable of unravelling the privacy paradox at a theoretical level, future research should empirically test these assertions in order to make this effort worthwhile. We recommend that, an exploratory qualitative research conducted using depth interviews would be suitable for such endeavor. Literature provides limited evidence how consumers perceive the impact of big data or their actual awareness about such technologies. A depth interview process would produce novel and extensive insights on this area of research.

To conclude, we suggest that consumers need to be highly informed and aware about the risks to their privacy when weighing the risks and benefits in the online shopping context. Privacy will be a mere abstract phenomenon in consumers' mind unless they understand the depth of privacy risks and impacts, and take adequate precautions. The organizations in the digital marketplace should ensure consumers' personal data are ethically and responsibly handled in order to protect consumer rights and maintain a trusting long-term relationship. The governments and policy makers should eliminate information asymmetries, provide regulatory protection, and educate consumers about the importance of privacy.

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