Privacy concerns and avoidance behaviour towards data-driven online behavioural advertising

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Abstract

Purpose – With the developments of the digital era and considerable developments in ICT, advertisers are leveraging data-driven forms of online advertising to target consumers individually. The present study integrates privacy concerns with the constructs from the persuasion knowledge model to investigate consumer avoidance of online behavioural advertising (OBA).

Design/methodology/approach – The study employed an online survey method for data collection using a sample size of 345. Reliability and validity of the measurement scales were ensured, and hypotheses developed were tested through PLS-SEM using SMART PLS.

Findings – The results show that persuasion knowledge is a significant predictor of perceived benefits, perceived risks and privacy concerns. Also, privacy concern was found to significantly mediate persuasion knowledge-avoidance behaviour and perceived risk-avoidance behaviour. On the other hand, the perceived benefit was not found significant in influencing privacy concerns for OBA.

Practical implications – The present study is one of the initial attempts to understand the level of knowledge Indian consumers hold about OBA and how they evaluate and respond to these data-driven forms of advertising. The current study helps advance knowledge of the field and the theories used. Future studies might look at the effect of various demographic and psychographic aspects on consumer avoidance of OBA.

Originality/value – As the country is shifting to digital, it becomes really important to understand the privacy concerns that people perceive in regard with the current advertising practices.

Keywords Online behavioural advertising (OBA), Persuasion knowledge model (PKM), Privacy concern, Avoidance behaviour

Paper type Research paper

1. Introduction

The developments of the digital era and the recent pandemic outbreak have prompted practically everyone to increase their Internet usage. According to a study, India holds the third position globally in the digital advertising industry, which is expected to grow exponentially by 2024 (Diwanji, 2019). The penetration of the internet and huge developments in disruptive technologies like data mining, machine learning, artificial intelligence (AI) and Internet of Things (IoT) are vital enablers or drivers in boosting the growth of the digital advertising industry. Advertisers are also leveraging the data-driven kind of internet advertising known as online behavioural advertising (OBA) as a medium to reach their individually targeted audience. Chen and Stallaert (2014) stated that behaviourally targeted advertisements promise to be the advertising industry's breakthrough in accurately targeting the desired set of consumers by profiling them based on their digital footprints on different websites, e-commerce and social media applications.

There are many explanations and definitions for OBA in the existing literature. It is changing and expanding with developments in technology over time. For McDonald and

Cranor (2010, p. 2), OBA means "the practice of collecting data about an individual's online activities for use in selecting which advertisement to display". Simply it is a practice of "Adjusting advertisements to previous online surfing behaviour," as pointed out by Smit, Van Noort, and Voorveld (2014, p. 15). Ham and Nelson define it as "a technology-driven advertising personalisation method that enables advertisers to deliver highly relevant ad messages to individuals" (2016, p. 690). In contrast, Boerman, Kruikemeier, and Zuiderveen Borgesius (2017, p. 364) describe it as "the practice of monitoring people's online behaviour and using the collected information to show people individually targeted advertisements".

Industry claims this data-driven OBA to be very promising (Kumar & Gupta, 2016). However, survey reports and academic literature suggest that this practice of tracking down consumers' online behavioural information raises concern in their minds. Reports show that around 68% of people in Australia do not prefer monitoring their Internet activity. Most of them do not want their online behavioural information stored to enable interest-based advertising (Australian Community Attitudes to Privacy Survey (ACAPS), 2017).

The concerns amongst consumers and their negative behaviour towards such advertisements pose a severe challenge to the effectiveness of advertising campaigns. Rejón-Guardia and Martínez-López (2014) opined that avoidance is the most significant way to cope with the negative consequences of OBA. Speck and Elliot (1997) studied avoidance behaviour towards advertisements in broadcast and print media, whereas Cho and Cheon (2004) studied avoidance behaviour in the context of online advertisements. Li and Huang (2016) investigated the antecedents of avoidance behaviour towards online behavioural advertisements. As the world's internet penetration rises with increasing instances of exposing consumers' online privacy, it is more critical than ever to understand what people know about OBA and how they react to this behaviourally targeted form of online advertising. The present study employs the persuasion knowledge model (PKM) as a theoretical foundation, and it aims to understand how persuasion knowledge of consumers help them to evaluate the risks-benefits associated with OBA in a better way and, further, how privacy concerns play a role in explaining avoidance behaviour of consumers towards OBA.

2. Theoretical background and literature review

Due to the field's interdisciplinary nature, previous researchers have used different theories to explain various consumer behaviour factors towards online behavioural advertisements (Boerman *et al.*, 2017). Many researchers claim that persuasion knowledge, a crucial predictor of coping behaviour, has not been utilised thoroughly to understand consumer response towards OBA (Boerman *et al.*, 2017; Smit *et al.*, 2014; Varnali K., 2021). Therefore, the present study proposes the research framework (Figure 1) by integrating perceived privacy concern with the constructs from the PKM to investigate consumer avoidance behaviour towards
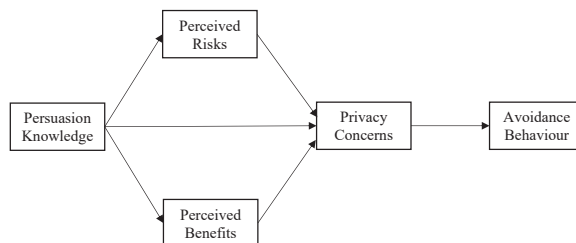
Figure 1.
Proposed framework

Source(s): Author contribution

OBA. The PKM explains how persuasion knowledge about any persuasion tactic influences the perception of such tactics, affecting coping behaviour (Friestad & Wright, 1994).

The literature exhibits that perception about consumers' privacy concerns plays a very substantial role in influencing consumer coping behaviour towards OBA (Baek & Morimoto, 2012; Ham, 2016; Li & Huang, 2016; Van der Goot et al., 2018).

2.1 Persuasion knowledge, perceived benefits-risk assessment and privacy concerns
The PKM describes how people's understanding of persuasion tactics influences acceptance or rejection (Friestad & Wright, 1994). According to the developments in PKM, actual knowledge regarding a given persuasion method is termed objective knowledge of persuasion tactic, whereas subjective PK is an individual's self-assessed impression of how persuasion works (Boerman et al., 2017; Carlson, Bearden, & Hardesty, 2007; Ham & Nelson, 2016). In their studies, McDonald and Cranor (2010) found that American consumers hold little to medium knowledge about behaviourally targeted online advertisements. In contrast, the study of Smit et al. (2014) gave an idea about the understanding of Dutch internet users. Other studies also describe that people possess a medium knowledge of OBA (Baek & Morimoto, 2012; Dehling, Zhang, & Sunyaev, 2019; Ur, Leon, Cranor, Shay, & Wang, 2012). Holvoet et al. (2022) examined the coping responses towards targeted advertising practices, and the results reveal that they hold minimal knowledge about personalised advertisements. Furthermore, it also suggested a need to bring awareness about these practices.

Thus, we ask the following research question:

RQ1. What level of objective knowledge do consumers in India possess about OBA?

Kirmani and Campbell (2004) explain that consumers resist the persuasion attempts if they find the agent's intent to be manipulative, whereas they accept the attempt if they find it cooperative. Ham (2016) integrated PKM and protection motivation theory and suggested a significant effect of subjective persuasion knowledge on perceptions about OBA (perceived benefits and risks) and privacy concerns related to OBA. The study reported that as knowledge increases, consumers would be better positioned to assess the harms and benefits of OBA. Morimoto (2021) explored the effect of persuasion knowledge on avoidance behaviour and attitude towards personalised advertising using the PKM as a theoretical lens.

The study of Ham (2016) also exhibits that persuasion knowledge has a significant relation with privacy concerns. Youn (2009) studied the behaviour of young consumers and opined that persuasion knowledge is significantly related to privacy concerns. Aiolfi, Bellini, and Pellegrini (2021) examined the benefits and risks associated with the data-driven form of online advertising to understand consumers' shopping behaviour. The studies also argued and concluded that consumers form a particular perception about OBA after assessing of risks and benefits associated with it and tend to change their behaviour after the risk-benefit review (Ham, Nelson, & Das, 2016; Jai, Burns, & King, 2013; Schumann, Von Wangenheim, & Groene, 2014).

Building upon the theoretical underpinnings and previous literature, we posit the following hypotheses:

H1a, b, c. Subjective persuasion knowledge has a significant positive effect on a) perceived benefits, b) perceived risks and c) perceived privacy concerns about OBA.

H2. Perceived risk positively influences privacy concerns about OBA.

H3. Perceived benefits have a significant negative association with privacy concerns for OBA.

2.2 Perceived privacy concerns and avoidance behaviour

OBA, a type of personalised advertising, use collected online information about individuals to provide them with more relevant advertisements to reduce clutter in online advertising (Goldfarb & Tucker, 2011). However, this practice conflicts with their personal space in the online environment and raises privacy concerns (Smit *et al.*, 2014). Privacy concerns are "the degree to which a consumer is worried about the potential invasion of the right to prevent the disclosure of personal information to others" (Baek & Morimoto, 2012, p. 63).

Although Australia is in the second position with a privacy score of 89.1 globally in offering online data privacy infrastructure, reports show that around 68% of people in Australia do not prefer monitoring their Internet activity. Most of them do not want their online behavioural information stored to enable interest-based advertising (Australian Community Attitudes to Privacy Survey (ACAPS), 2017). We wondered what would be the case with Indian consumers when we are still in the stage of development with a rank of 34 with a privacy score of 53.1.

Singaraju *et al.* (2022), in their study, explained how perceptual factors affect the avoidance intention of personalised YouTube advertising and the results of the study reveal that there is a positive association between perceived privacy concern, goal impediment and advertising avoidance, whereas a negative relationship between entertainment, informativeness (dimensions of benefits) and ad avoidance intention. Aiolfi *et al.*'s (2021) study reveal that avoidance intention is positively related to privacy concerns. Also, the intention to accept and avoid the online behavioural advertisement affected the click intention and behavioural intention towards OBA. Milne, Rohm, and Bahl (2004) concluded that people with more severe privacy concerns would be more likely to protect themselves by showing resistance to such practices. A similar result was also confirmed in the study of Youn (2009) and Ham (2016). The studies explained how privacy concerns were positively associated with avoidance behaviour towards OBA.

Accordingly, we propose the following hypotheses:

H4. Perceived privacy concern has a significant positive effect on avoidance behaviour towards OBA.

H5a, b. Perceived privacy concern significantly mediates the relationships of a) subjective persuasion knowledge-avoidance behaviour and b) perceived risk-avoidance behaviour towards OBA.

3. Methodology

3.1 Sampling and data collection

The study employed an online survey method using a structured questionnaire for data collection. Minimum sample size requirements were ensured, and it was found to be 262 through power analysis (at 0.05 level of significance and 0.05 effect size) using G* Power software (Faul, Erdfelder, Lang, & Buchner, 2007). Kline (2015) suggests at least 200 observations for reliable SEM estimates. The convenience sampling method was used, and a sample of 345 was utilised for the present study, which is well above the minimum sample size requirement.

The respondents comprise mainly students and young working professionals aged between 15 and 35. More than half of the respondents were male (61.4%), students (52.8%) and aged between 15–25 years (55.9%). A total of 84.3% of the respondents reported using the Internet for more than eight hours daily. More details about the demographic profile of the respondents are given in Table 1.

3.2 Measurements

All the constructs were measured through reflective measurement modelling with items on a seven-point Likert scale ranging from strongly disagree to strongly agree, except for

objective persuasion knowledge. The study adapted measurement scales from previous literature. Objective persuasion knowledge was measured using eight statements (true/false type; by coding correct answer as one and incorrect as zero) adapted from McDonald and Cranor (2010) and Smit *et al.* (2014). Subjective persuasion knowledge was measured through a six-item scale adapted from Bearden, Hardesty, and Rose (2001) and Ham (2016).

Perceived risks and benefits were measured by adapting scales from Ham (2016). The former was measured by weighing four items of perceived vulnerability with corresponding items for the perceived severity of that risk. Also, the latter was measured similarly by weighing five items of reward beliefs with corresponding items for the perceived beneficiality of each reward belief. Privacy concern was measured using a six-item scale adapted from Baek and Morimoto (2012) and Ham (2016). Consumer avoidance of online behaviour advertising was measured using a five-item scale adapted from Cho and Cheon (2004) and Ham (2016).

3.3 Data analysis

The reliability and validity assessment of the measurement scales were ensured through confirmatory factor analysis, and hypotheses developed were tested through PLS structural equation modelling using SMART PLS.

Since the data were not following multivariate normality (Table 2), the study preferred variance-based SEM over covariance-based SEM (Hair, Risher, Sarstedt, & Ringle, 2019). A full collinearity assessment was also done, and it was found that all the variance inflation factor values for the constructs were well below the conservative threshold of 3.33 (Kock, 2015), which establishes that the present study is free from common method bias.

4. Results

4.1 Objective knowledge about OBA

The results for RQ1 show that respondents have a medium level of knowledge and understanding of OBA, with an average score of four correct statements out of eight.

There were five true and three false statements. Table 3 exhibits the result in percentage (T/F) for each statement. It can be seen that most of them (88.4%) were incorrect about

Characteristics		Percentage (%)
Gender	Male	61.4
	Female	38.6
Age	15–25 years	55.9
	26–35 years	44.1
Occupation	Student	52.8
	Working	42.9
	Others	4.3
Source(s): Authors' contribution		

Table 1.
Demographic profile of the respondents

	Skewness	Kurtosis
B	1679.916	6119.636
Z	9659.165	56.679
p-value	0.000	0.000
Source(s): Authors' contribution		

Table 2.
Mardia's test for multivariate skewness and kurtosis

Items	T (%)	F (%)
OK1: "When I visit a website, I see the same advertising as someone else visiting that website."	30.72	*69.27*
OK2: "Companies gather and store information about my Internet use when I give them permission to do so."	88.4	*11.59*
OK3: "The online behavioural advertising that appears on a website differs per visitor."	*75.07*	24.92
OK4: "It is punishable for companies to gather and store information about individuals' Internet use."	78.55	*21.44*
OK5: "Your browsing history determines which advertisements you are going to see during your next visit."	*78.26*	21.73
OK6: "Companies are allowed to store information about Internet use, provided that it is not traceable to a person."	*47.82*	52.17
OK7: "Companies create different user segments based on their Internet behaviour, and they show these groups targeted advertisements."	*81.73*	18.26
OK8: "Online content and services can be offered for free because of online advertising revenues."	*73.33*	26.66

Table 3.
Objective knowledge
about OBA

Note(s): T = True; F=False; Correct answer (%) in bold and italics; Adapted from McDonald and Cranor (2010) and Smit *et al.* (2014).
Source(s): Authors' contribution

companies being allowed to store their online information. Only 21.4% of the respondents were correct about whether the companies are punishable for gathering data. It is also unclear to 52.17% of people that companies can collect data provided that is not traceable to a person. It can be concluded that respondents have confusion regarding the regulation for tracking and storing peoples' online information.

4.2 PLS-SEM results

4.2.1 Measurement model assessment results. All the constructs were reflectively measured. Therefore, the first step is to check whether the item loadings of all the construct indicators are above the recommended threshold of 0.708 (Hair *et al.*, 2019). The results show that item loadings for every construct's indicators were above 0.708 except one indicator (SK6; loading = 0.649) of subjective persuasion knowledge. Before eliminating any item with loadings lower than the threshold value, checking the AVE value for that construct is suggested. Hair *et al.* (2019) recommend that one must retain that indicator if AVE is above 0.50.

The results of the measurement model assessment (Table 4) show that all the measurement instruments were reliable, with composite reliability above 0.708 (Hair *et al.*, 2019). Other reliability measures like Cronbach's alpha and rho A are also provided in Table 4. The convergent validity of measurement scales was ensured by assessing whether average variance extracted (AVE) values were above the threshold of 0.5. From the results, it was evident that all the AVE values were well above the threshold.

Furthermore, discriminant validity (Table 5) was evaluated by both the Fornell–Larcker criterion and Heterotrait-Monotrait (HTMT) ratio methods. The results indicate that the square root of each construct's AVE was found to be higher than its correlation with another construct, establishing discriminant validity through the former method. (Fornell & Larcker, 1981). It is suggested that the HTMT ratio gives better results in evaluating whether the constructs are distinct or not. The results show that all the HTMT values were below 0.85, which is well within the advisable thresholds (Henseler, Ringle, & Sarstedt, 2015).

4.2.2 Structural model assessment. The variance inflation factor (VIF) values were below 3.33 (Hair *et al.*, 2019), suggesting no multi-collinearity amongst the constructs. The results of the structural model assessment (Table 6) exhibit that seven out of eight hypotheses were supported by considering the path coefficient, *t*-statistic, *p*-value and effect size.

Constructs/ Indicators	Loadings	Cronbach's alpha	rho_A	Composite reliability	Average variance extracted (AVE)
Avoidance behaviour					
AV1	0.784	0.860	0.868	0.899	0.640
AV2	0.832				
AV3	0.749				
AV4	0.829				
AV5	0.802				
Perceived benefits					
PB1	0.890	0.932	0.983	0.946	0.779
PB2	0.911				
PB3	0.884				
PB4	0.863				
PB5	0.864				
Privacy concerns					
PC1	0.805	0.898	0.900	0.922	0.662
PC2	0.824				
PC3	0.833				
PC4	0.865				
PC5	0.755				
PC6	0.797				
Perceived risks					
PR1	0.886	0.921	0.938	0.944	0.808
PR2	0.912				
PR3	0.887				
PR4	0.909				
Subjective persuasion knowledge					
SK1	0.783	0.861	0.876	0.895	0.589
SK2	0.777				
SK3	0.796				
SK4	0.794				
SK5	0.794				
SK6	0.649				

Source(s): Authors' contribution

Table 4.
Item loadings,
reliability and
convergent validity

	AV_Be	PB	PC	PK	PR
Fornell–Larcker criterion					
AV_Be	0.800				
PB	0.012	0.883			
PC	0.615	0.076	0.814		
PK	0.262	0.123	0.342	0.767	
PR	0.208	0.189	0.293	0.178	0.899
HTMT ratio					
AV_Be					
PB	0.059				
PC	0.685	0.083			
PK	0.302	0.122	0.369		
PR	0.229	0.204	0.318	0.195	

Source(s): Authors' contribution

Table 5.
Discriminant validity

Path	Original sample (o)	Standard deviation (st dev)	T Statistics (|o/st dev|)	p values	Effect size (f^2)	Decision
H1a: PK → PB	0.123	0.062	1.971	0.049	0.021	Supported
H1b: PK → PR	0.178	0.056	3.169	0.002	0.066	Supported
H1c: PK → PC	0.300	0.055	5.498	0.000	0.104	Supported
H2: PB → PC	−0.006	0.06	0.108	0.914	0.001	Not Supported
H3: PR → PC	0.241	0.055	4.383	0.000	0.033	Supported
H4: PC → AV_BE	0.615	0.037	16.821	0.000	0.608	Supported
H5a: PK → PC → AV_BE	0.185	0.036	5.138	0.000	—	Supported
H5b: PR → PC → AV_BE	0.148	0.037	4.006	0.000	—	Supported

Source(s): Authors' contribution

The results show that an increase in the persuasion knowledge of consumers about OBA increases a consumer's ability to perceive the benefits and risks associated with these covert advertising practices. Also, increasing persuasion knowledge and risk perception about OBA significantly raises privacy concerns amongst consumers. These results are consistent with previous studies by Ham (2016). On the other hand, the perceived benefit was not found significant in influencing privacy concerns for OBA. In contrast with previous studies, this result indicates that providing more benefits might not reduce the concern amongst consumers (see Figure 2).

The specific indirect path analysis indicates that privacy concern significantly mediated the relationship between persuasion knowledge-avoidance behaviour and perceived risk-avoidance behaviour. These results are also consistent with previous research. This shows that an increase in understanding of OBA and the risk perception of these covert tactics increases consumer concerns, leading to increased avoidance of such practices. This shows that privacy concern is a very crucial aspect of understanding consumer avoidance of OBA.
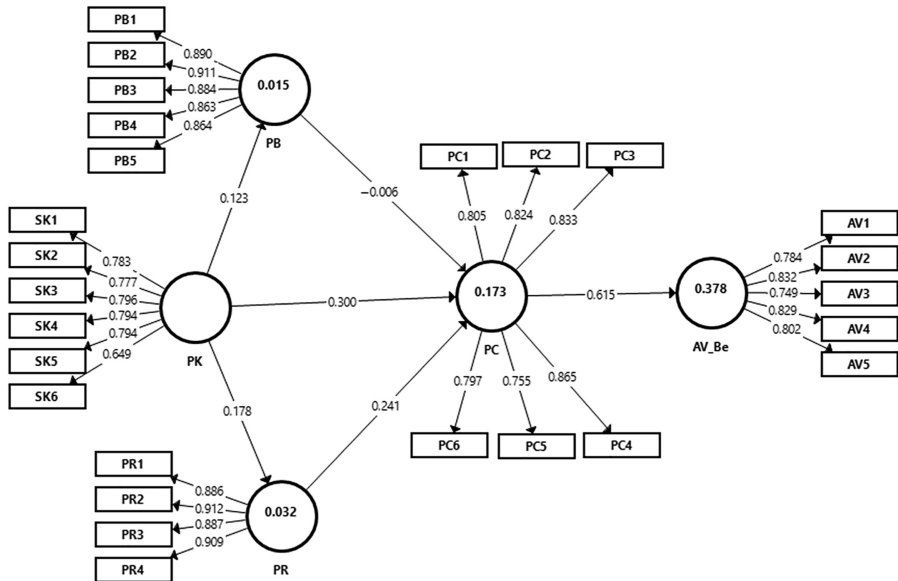

Figure 2.
Path model

Source(s): Author contribution

4.2.3 Predictive relevance of the model. The coefficient of determination (R^2) was 37.8% for avoidance behaviour which shows that the model has moderate explanatory power. Henseler *et al.* (2015) suggest that R^2 is not enough to determine the model's prediction power as it is in-sample prediction (see Table 7).

Therefore, we should see Q^2, a measure that incorporates out-of-the-sample predictive relevance of the model as well. Q^2 for Avoidance behaviour was 0.234, suggesting moderate predictive relevance. The model was found to be good to the tune of 94.5% ($=1-$ SRMR), with an SRMR of 0.055.

5. Discussion
The results show that respondents have a medium level of knowledge about OBA, with an average score of four correct statements out of eight. Evidently, the respondents were mistaken regarding tracking and storing peoples' online information. The results regarding the level of persuasion knowledge that consumers hold in India were found to be similar to the results from prior studies by Baek and Morimoto (2012), McDonald and Cranor (2010), Smit *et al.* (2014) and Ur *et al.* (2012) in a sense that people hold a very little to medium knowledge about OBA.

The results show a significant positive influence of persuasion knowledge on perceived benefits, perceived risks and privacy concerns for OBA, with perceived risks significantly mediating the relation between persuasion knowledge and privacy concern. Studies by Holvoet *et al.* (2022) and Ham (2016) also presented similar results regarding the impact of subjective persuasion knowledge on the ability of consumers to make a better understanding of risk perceptions and benefit perceptions. Also, privacy concern was found to significantly mediate persuasion knowledge-avoidance behaviour and perceived risk-avoidance behaviour. The results were consistent with research works previously done in other parts of the world (Aiolfi *et al.*, 2021; Ham, 2016; Milne *et al.*, 2004).

On the other hand, perceived benefit was not found significant in influencing privacy concerns for OBA. In contrast with the results of the previous studies of Singaraju *et al.* (2022) and Ham (2016), benefits perception was not found to have a negative association with avoidance behaviour. Instead, it was found that benefits do not really matter to Indian consumers in the case of behaviourally targeted online advertising. Moderate predictive relevance of the model was established with R^2 of 0.376 and Q^2 of 0.234.

Since this field is still very much in the early stages of research, the current study helps advance existing knowledge of the field and the theories used. The majority of OBA research is conducted only in developed countries like the United States, China and European countries such as Belgium. However, there has been little research on this aspect in developing countries like India. The present study is one of the initial attempts to understand the level of knowledge Indian consumers hold about OBA and how they evaluate and respond to these data-driven advertising forms. As the country is shifting to digital, it becomes imperative to understand people's privacy concerns regarding current advertising practices. The study also aids advertisers and academics in better understanding consumer avoidance behaviour in developing nations like India and creating an appropriate OBA strategy.

	R square	R square adjusted	Q^2 ($=1-$ SSE/SSO)
Avoidance behaviour	0.378	0.376	0.234
Privacy concern	0.173	0.172	0.109
Source(s): Authors' contribution			

Table 7.
Predictive relevance

The findings might help policymakers set online behavioural data tracking and advertising standards.

As with every research, this study also has its own limitations. The study used convenience sampling, and the respondents were limited to a particular age group and profile, which might limit the scope of this study to only students and young working professionals. Future studies might expand the profile of the respondents, which might help to gain a deeper insight regarding the behaviour depicted by consumers towards OBA. However, this limitation was addressed to some extent as the predictive relevance of the model was found to be medium, which enhances the applicability of the results to other contexts as well. Also, the present study does not address various demographic and psychographic factors' role in deciding behavioural intention. Future studies might look at the effect of various demographic and psychographic aspects on consumer avoidance of OBA. Also, different theoretical lenses might be used to understand avoidance behaviour better. As digital inclusion and literacy are increasing day by day, future research might also focus on longitudinal studies to understand the changing patterns for knowledge about OBA, privacy concerns and avoidance behaviour towards OBA.

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