

A Cross-Sectional Descriptive Study of the Discomfort with Technology (DIF) Towards the Perceived Ease of Use (PEE) in the AI Driven Personalization

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Abstract

The study aims to find the effect of the discomfort with technology on the perceived ease of use in the purchasing of goods & services using AI driven personalization. The preliminary study was conducted with small sample of respondents to check the reliability & validity of the questionnaire. The reliability condition was checked by the Cronbach alpha value above 0.700 and the validity condition was checked by the KMO value above 0.500. The corrected item total correlation (CITC) value was above 0.300 for the deletion of items under the two main constructs that is Discomfort with the Technology (DIF) and Perceived Ease of Use (PEE). The Bartlett test was significant in this study for the sampling adequacy conditions. The sample size of 407 was collected using non probability snowball sampling technique. The exploratory and descriptive research design was used in this study. The significance level was set at 5% for accepting and rejecting the null and alternative hypothesis. The statistical calculation was performed using Statistical Package for Social Science (IBM-SPSS) 23.0 version software. The findings concluded that by increasing the discomfort with technology, the consumer's perceived ease of use also decrease in the purchasing of goods & services using AI driven personalization.

Keywords: *Discomfort with Technology; Perceived Ease of Use; Artificial Intelligence; Personalization; E- Commerce.*

1. INTRODUCTION

In today's fast evolving technological micro and macro environment, the integration of Artificial Intelligence (AI) into personalized services has revolutionized user experiences

across industries, from e-commerce and entertainment to healthcare and education. AI-driven personalization leverages advanced algorithms to analyze vast amounts of user data, delivering tailored recommendations, customized interfaces, and predictive solutions. While these advancements hold immense potential to enhance user satisfaction and engagement, the process of adoption is not without challenges. A significant barrier to the seamless adoption of such systems is the discomfort many users experience with technology, a factor that directly influences their perception of ease of use, a critical determinant of technology acceptance. Discomfort with technology stems from various psychological, cognitive, and emotional factors, including technophobia, lack of familiarity, distrust in automation, concerns over privacy, and the perceived complexity of AI systems. This discomfort is particularly pronounced in the context of AI-driven personalization, where the opacity of algorithmic processes, coupled with the reliance on sensitive user data, often generates apprehension among users. Such discomfort may lead to resistance, avoidance, or superficial interaction with the technology, thereby undermining the effectiveness and perceived ease of use of these advanced systems. The Technology Acceptance Model (TAM) highlights that perceived ease of use, alongside perceived usefulness, is a cornerstone in determining user adoption of technology. Discomfort with technology can adversely affect perceived ease of use by heightening the cognitive and emotional effort required to interact with AI-driven systems, making them appear less intuitive or user-friendly. For instance, users who are not technologically adept may find it challenging to navigate personalized interfaces or comprehend the rationale behind AI-generated recommendations, leading to frustration and dissatisfaction. Moreover, concerns about data security and the ethical implications of AI personalization further amplify this discomfort, as users question the extent of control they have over their digital identities. These challenges underscore the need for a comprehensive understanding of how discomfort with technology influences perceived ease of use in the context of AI-driven personalization. Addressing this issue is crucial for organizations aiming to optimize user engagement and satisfaction, as failure to mitigate discomfort can result in reduced adoption rates, limited utilization of system features, and ultimately, diminished returns on technological investments. Research in this area has emphasized the importance of user-centric design, which prioritizes intuitive interfaces, transparent communication, and robust data security measures to alleviate discomfort and enhance ease of use. Furthermore, adaptive technologies that adjust complexity based on user proficiency, coupled with educational initiatives to improve digital literacy, are key strategies to bridge the gap between advanced AI capabilities and user readiness. This paper aims to explore the multifaceted relationship between discomfort with technology and perceived ease of use in AI-driven personalization, examining the psychological and technological factors that contribute to user apprehension and proposing actionable solutions to foster greater acceptance and satisfaction. By shedding light on this critical aspect of human-technology interaction, the study seeks to provide valuable insights for designers, developers, and stakeholders striving to create AI systems that are not only powerful but also accessible, trustworthy, and aligned with user expectations. Through a thorough investigation of existing literature, empirical data, and theoretical frameworks, this research endeavors to advance the understanding of how discomfort with technology shapes the perceived ease of use in AI-driven personalization,

ultimately contributing to the development of more inclusive and user-friendly technological solutions.

2. Literature Review

In order to get access to academic works and papers that have been vetted by other experts in the field, these platforms serve as useful repositories that add to a full comprehension of the related topic. In order to guarantee the systematic organizing and citation of various sources, solutions such as Mendeley Reference Manager are used. Various tools adhere to the style of the American Psychological Association (APA) 7th edition, which standardizes referring and promotes academic rigor. The previous authors findings are arranged in a chronological order as follows: (Sodiq Odetunde Babatunde et al., 2024) found that using artificial intelligence to reshape the client experience is the future of marketing, which raises ethical concerns but also presents opportunities. In order to guarantee ethical operations, detailed guidelines are required to address concerns about data privacy and to guarantee customisation driven by artificial intelligence. To successfully exploit the potential of artificial intelligence in marketing personalization, organizations need to adapt to changing regulations and modify marketing key performance indicators (KPIs). (Bell et al., 2024) found that increasing the efficiency of marketing via the enhancement of consumer interactions and the enhancement of customer engagement is the goal of digital marketing. In this user-centric approach, however, it is necessary to address ethical concerns such as data privacy and manipulation in order to preserve the faith of customers and to comply with legal rules concerning the strategy. (Amil, 2024) revealed that confidentiality considerations have a huge impact on the alignment of artificial intelligence and user trust. Despite the fact that major privacy concerns may increase confidence in artificial intelligence systems, they can also decrease trust, which can have a detrimental influence on engagement levels. As a result, it is essential for artificial intelligence to address concerns about privacy and to guarantee the safety of the system. (Potwora et al., 2024) revealed that the use of artificial intelligence in marketing has changed productivity by automating jobs and improving connections with customers. On the other hand, it poses questions of ethics and privacy. Ethical artificial intelligence systems that respect the privacy of consumers and eradicate preconceptions should be the primary emphasis of future breakthroughs in artificial intelligence marketing, such as natural language processing, augmented reality, and virtual reality. (David Iyanuoluwa Ajiga et al., 2024) found that in order to change the retail industry, IBM Watson is using computer vision and artificial intelligence. Inventory management, pricing tactics, and operational efficiency are all being revolutionized under the influence of this technology. When it comes to realizing the potential of artificial intelligence and cultivating long-lasting connections with customers in a retail setting that is driven by data, however, ethical concerns and ethical usage are absolutely necessary. (Bhuiyan, 2024) found that As a result of the use of customer data to give personalized suggestions, AI-driven customisation has the potential to revolutionize consumer experiences across all sectors. Through the use of this technology, consumer pleasure and loyalty are increased, which in turn enables focused marketing efforts. On the other hand, there are obstacles such as the availability of data, privacy, and security.

Companies need to make investments in technology, trained workers, data scientists, and AI specialists in order to properly employ artificial intelligence. **(Ibrahim, 2024)** found that through the use of predictive analytics and immediate interactions, artificial intelligence (AI) is bringing about a transformation in the consumer experience. Because of this technology, engagement is increased, customer churn is decreased, and customer service is improved. Customization that is powered by artificial intelligence provides a number of business benefits, including better conversion rates and competitiveness. AI may be used by organizations to improve customer relationship management (CRM) strategies, boost client insights, and achieve long-term success. **(Potla & Pottla, 2024)** found that CRM is improved by AI since it enables more personalized interactions; nonetheless, difficulties like as data quality and ethical concerns continue to exist. It is essential to place a high priority on data integrity, skill in artificial intelligence, and customer-oriented tactics in order to maximize advantages. **(Gujar, 2024)** found that By allowing experiences that are both seamless and highly tailored, artificial intelligence is driving revolutionary change in enterprises. Not only does this cause a rise in customer happiness and loyalty, but it also propels the growth of the firm and gives it an edge over its competitors. The customisation of information that is driven by artificial intelligence provides a number of advantages to both people and enterprises, including increased customer loyalty, increased engagement, and increased conversions. Marketing strategies are being revolutionized by this technology, which is also improving the experiences of customers. **(Alexander, 2024)** found that CRM is undergoing a revolution as a result of innovative technologies, which are helping businesses to improve their efficiency, personalization, and engagement with customers. Nevertheless, new technologies also create ethical challenges, such as the inappropriate use of personal information and difficulty in conceptualizing. The change toward a customer-centric approach is being driven by these technologies, notwithstanding the obstacles that they provide. **(Castro et al., 2024)** found that the identification of individual student characteristics, the customization of material distribution and evaluation methods, and the use of modern artificial intelligence tools are the key mechanisms that drive customized learning in the educational sector. These approaches improve the quality of individualized learning experiences and cater to the varied requirements of learners. For the purpose of ensuring that artificial intelligence is used in education in a fair and equitable manner, future research should concentrate on the long-term effect of AI-driven customization and ethical frameworks. **(Cao, 2024)** found that the pleasure of Zhejiang consumers with AI-trained marketing is greatly impacted by the tailored advantages they get. This highlights the significance of personalized marketing in the process of building happiness in environmental protection sectors. Businesses have the ability to design tailored marketing plans that adapt to the interests and needs of individual customers by leveraging data-driven insights and current technologies. **(Zhao, 2024)** found that through the use of personalized marketing, companies are able to better understand the requirements of their customers and devise tactics that are specifically suited to meet those requirements. Businesses have the ability to predict consumption patterns, increase their market competitiveness, and enhance the customer experience via the use of artificial intelligence and data analysis, which are all factors that contribute to ongoing development. **(Tompo, 2024)** found that utilizing artificial intelligence technology in marketing strategies for digital

marketing allows for the customization of the user experience, the strengthening of customer ties, and the promotion of innovation. via the use of this strategy, which is made possible via the cooperation of experts, academics, and government officials, businesses are able to devise effective plans that are in line with the expectations of customers in the internet age. **(Alladi, 2024)** found that A great amount of potential exists within the projected area of AI-driven customer relationship management (CRM) for raising customer happiness and improving client engagement. Hyper-personalization, predictive analytics, and natural language processing are examples of technologies that have the potential to improve customer relationship management (CRM) systems. These technologies may optimize internal operations and promote sustainable growth in the highly competitive digital market. **(Adebayo, 2024)** found that By using predictive analytics and machine learning, customer relationship management (CRM) is able to enhance customer engagement, which in turn leads to increased customer satisfaction and increased conversion rates. Interactions with customers are being revolutionized as a result of this strategic approach, which is laying the path for long-term success in the market. **(Sidlauskienė et al., 2023)** found that buyers have about the degree of personalization of products and their willingness to pay greater costs may be strongly impacted by anthropometric cues, especially those that resemble human traits. When utilizing an anthropomorphic chatbot, this is especially clear since it creates a setting that is familiar to the user and decreases the amount of confusion that they experience. **(Haleem et al., 2022)** found that A potent tool for marketing, artificial intelligence is causing a change in the way organizations function. Enhanced customer engagement and loyalty may be achieved via the use of its learning capabilities, which include both machine learning and deep learning. The use of artificial intelligence (AI) in different parts of marketing operations, such as sales, payment, and engagement, is becoming more common. AI is also capable of assisting in the personalization of content, the enhancement of email marketing campaigns, and the provision of real-world information to marketers. **(Bawack et al., 2022)** found that It is becoming more common to make use of artificial intelligence (AI) in the context of e-commerce, with China and the United States being the top researchers in this field. China is identified as the country that has conducted the most comprehensive research on technology in this field, with research concentrating on topics such as optimization, trust, customization, sentiment analysis, and concepts related to artificial intelligence. The vast majority of research on artificial intelligence is published in journals that cover topics such as computer science, artificial intelligence, business, and management. **(Ameen et al., 2021)** found that the recognition aspects emphasize the significance of relationship commitment in AI-enhanced retail experiences. These dimensions highlight the significance of the relationship in terms of trust and perceived sacrifice, which may result in a more positive experience. **(Khrais, 2020)** found that In order to broaden their consumer base and benefit on the influence of artificial intelligence, businesses that engage in e-commerce are using a variety of platforms. This is resulting in increased customer retention and happiness, which in turn paves the way for future development. **(Patel & Trivedi, 2020)** found that although the employment of chatbots has been shown to have a major impact on customer loyalty, development has been modest despite this. Increasing consumer engagement and trust is being accomplished via the use of personalization and machine learning. The fields of

Natural Language Processing (NLP) and machine learning are now being investigated with the goal of improving human-computer interaction, decision-making power, and operational efficiency. (Ikumoro & Jawad, 2019) found that to improve their marketing efforts, businesses are increasingly turning to real-time communication technologies, such as Chatbot-AI, which is becoming more popular. This technology, which is anticipated to rise by a factor of four in the future year, has the capability of delivering individualized experiences, which may result in greater sales and profitability. (Shanahan et al., 2019) found that over the course of the past decade, social media has evolved into an essential medium for human interaction, resulting in a fourfold increase in the amount of money that businesses spend on marketing. The perceived level of customisation has a favorable impact on brand engagement, attachment, and loyalty for businesses that are active on Facebook, according to a research that was conducted on personalized advertising. (Gupta & Bansal, 2018) found that tailored AI-driven customisation has the potential to increase sales by giving individualized shopping experiences.

3. Research Gaps

After reviewing the previous research papers in the arena of AI driven Personalization in the purchasing of good and services, a little work have been found for the cause and effect of discomfort with the technology on the perceived ease of use, though the Technology Acceptance Model (TAM) have worked in this area. Therefore, there is an urgent need to study the cause and effect of discomfort with the technology on the perceived ease of use in the AI driven Personalization in the purchasing of good and services.

4. Objective

The objective of this study is as follows:

- To find the effect of the discomfort with technology on the perceived ease of use in the purchasing of goods & services using AI driven personalization.

5. Hypothesis

The null and alternative hypothesis of this study are as follows:

- H0: There is no significant effect of the discomfort with technology on the perceived ease of use in the purchasing of goods & services using AI driven personalization.
- H1: There is a significant effect of the discomfort with technology on the perceived ease of use in the purchasing of goods & services using AI driven personalization.

6. Methodologies

The preliminary pilot study was conducted in the small sample of respondents to check the reliability and validity of the structured questionnaire. The reliability condition was checked by the Cronbach alpha value above 0.700 and the validity condition was checked by the KMO value above 0.500. The corrected item total correlation (CITC) value was above 0.300

for the deletion of items for the two main constructs that is “Discomfort with the Technology” and “Perceived Ease of Use”. The Bartlett test was significant in this study for the sampling adequacy conditions. The sample size of 407 was collected using non probability snowball sampling technique. A web based google form structured questionnaire was designed to get the fast and reliable responses from the respondents who frequently purchase the goods & services using AI driven personalization and customization. The exploratory and descriptive research design was used in this study, The exploratory research design explored the new facts, new knowledge, new information, new insights to formulate the null and alternative hypothesis. The descriptive research was used to test the null and alternative hypothesis using correlation and regression analysis. The significance level was set at 5% for accepting and rejecting the null and alternative hypothesis. The statistical calculation was performed using Statistical Package for Social Science (IBM-SPSS) 23.0 version software. The demographic grouping variables are measured in the nominal scale whereas latent variable “discomfort with the technology” and “perceived ease of use” constructs are measured in the 5 points Likert scale. The 1 is considered as the strongly disagree, 2 is disagree, 3 is neither agree nor disagree, 4 is agree and 5 is the strongly agree.

7. Results

The results are derived from the data analysis using SPSS 3.0 version software. The SPSS output are as follows:

7.1 Correlation & Regression

Correlation & regression analysis are statistical techniques used to explore the cause-and-effect relationships between variables. Correlation measures the direction of a linear relationship between two variables, typically quantified by the correlation coefficient (r), ranging from -1 to +1. Regression, on the other hand, models the relationship between a dependent variable and one or more independent variables, allowing for predictions. While correlation assesses association without implying causation, regression identifies how changes in the independent variables influence the dependent variable. Both tools are widely used in fields like economics, science, and marketing for understanding patterns, making predictions, and informed decision-making. In this study, the regression model can be derived as:

$$Y = a + b X$$

Where X= Independent variable = Discomfort with the Technology

Y= Dependent Variable = Perceived Ease of Use

a and b are the constants

Table 1: Correlations - Discomfort With Technology & Perceived Ease of Use

		Perceived Ease of Use	Discomfort With Technology
Pearson Correlation	Perceived Ease of Use	1.000	-.765
	Discomfort With Technology	-.765	1.000
Sig. (1-tailed)	Perceived Ease of Use	.	.000
	Discomfort With Technology	.000	.
N	Perceived Ease of Use	407	407
	Discomfort With Technology	407	407

Source: SPSS 23.0

Based on the correlation table 1, the Pearson correlation coefficient stands at -0.765, indicating a high negative correlation between discomfort with technology and consumer's perceived ease of use. Since the sig value (0.000) is less than 0.05, hence the correlation between discomfort with technology & consumer's perceived ease of use is highly significant; therefore, it can be concluded that by increasing the discomfort with technology, the consumer's perceived ease of use will decrease in the purchasing of goods and services with AI driven personalization.

Table 2: Variables Entered/Removed: Discomfort With Technology & Perceived Ease of Use

Model	Variables Entered	Method
1	Discomfort With Technology	Enter
Dependent Variable - Perceived ease of use		

Source: SPSS 23.0

According to the Variables Entered/Removed table 2, it is clear that the independent variable is discomfort with technology and the dependent variable is the consumer's perceived ease of use. The enter regression method was used to test the cause-and-effect relationship between the construct "discomfort with technology" and "consumer's perceived ease of use".

Table 3: Model Summary: Discomfort With Technology & Perceived Ease of Use

Model	R	R Square
1	.765	.585

Source: SPSS 23.0

According to the model summary table 3, the R^2 is 0.584; hence, it explained 58.4% of the variance in the dependent variable by the independent variable, which means it is good to select the model for further statistical interpretation.

Table 4: ANOVA; Discomfort With Technology & Perceived Ease of Use

Model	SS	df	MS	F	Sig.
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1	Regression	166.748	1	166.748	571.164	.000
	Residual	118.237	405	.292		
	Total	284.985	406			

Source: SPSS 23.0

Note- SS-Sum of Squares, MS-Mean Square

According to the ANOVA table 4, $F = 571.164$ & Sig Value p value = 0.000 less than 0.05, hence the model is highly significant.

Table 5: Coefficients: Discomfort With Technology & Perceived Ease of Use

Model		UC		SC	t	Sig.	Hypothesis Result
		B	SE	Beta			
1	(Constant)	5.485	.067		82.420	.000	Significant
	Discomfort With Technology	-.425	.018	-.765	-23.899	.000	
Dependent Variable: Perceived Ease of Use							

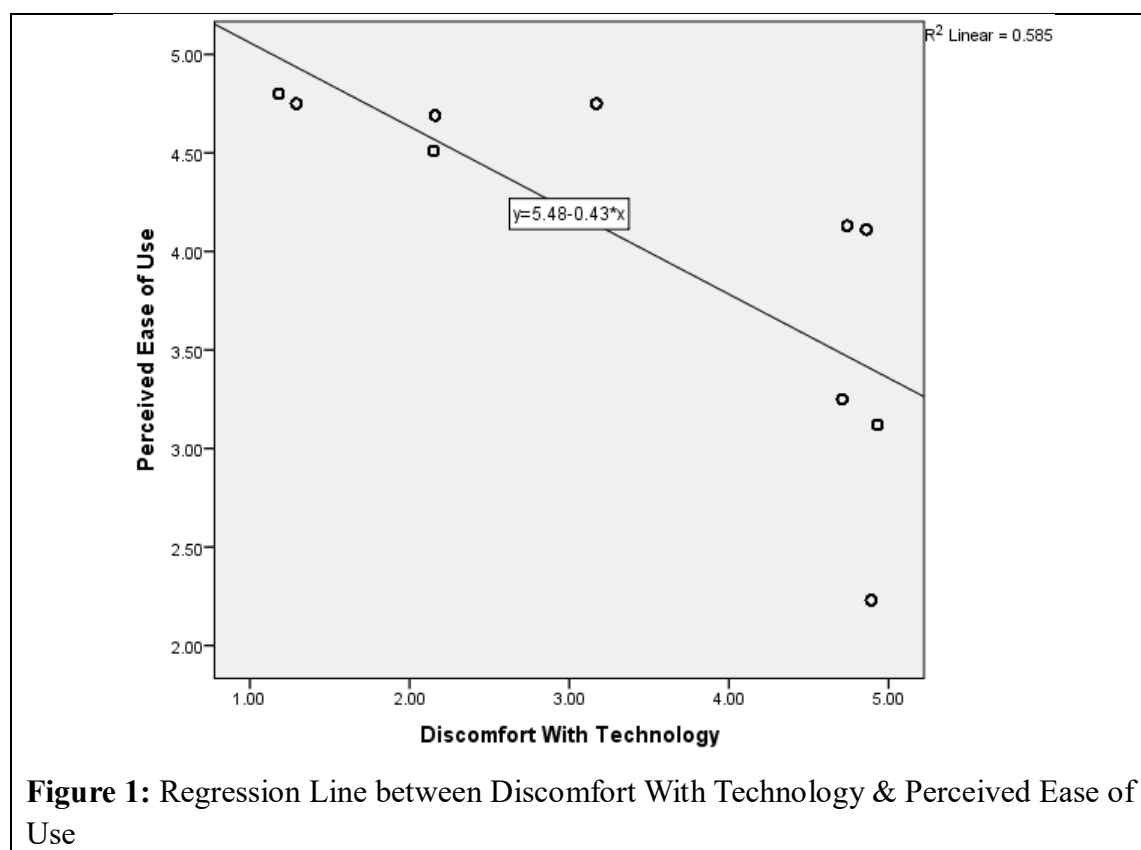
Source: SPSS 23.0

Note- UC-Unstandardized Coefficients, SC-Standardized Coefficients, SE-Std. Error

According to the coefficient table 5, the construct “discomfort with technology” (Sig value $0.000 < 0.05$) is significant. Since the null hypothesis (H_0 : There is no significant effect of the discomfort with technology on the perceived ease of use in the purchasing of goods and services with AI driven personalization), hence it is safe to reject the null hypothesis. Therefore, it can be concluded that there was a significant effect of the discomfort with technology on the perceived ease of use in the purchasing of goods and services with AI driven personalization. The regression equation can be derived as:

$$Y (\text{consumer's perceived ease of use}) = 5.485 + (-0.765) (\text{discomfort with technology}).$$

Therefore, assuming other variables remain constant, an increase of one unit in the discomfort with technology parameters leads to a decrease of 0.765 units in the consumer's perceived ease of use when purchasing goods and services with AI driven personalization. The following graph displays the regression line:



Source: SPSS 23.0

According to the regression line between discomfort with technology & consumer's perceived ease of use, by increasing the value of discomfort with technology, the consumer's perceived ease of use is decreasing in the purchasing of goods and services with AI driven personalization. (See Figure 1)

8. Discussion & Conclusion

It can be finally concluded that there was a negative correlation between customers' perceived ease of use (PEE) and their level of discomfort with technology (DIF) and also there was a significant effect of the discomfort with technology on the perceived ease of use in the purchasing of goods and services with AI driven personalization. Customers that are uncomfortable with technology often suffer feelings of anxiety or worry when it comes to utilizing new technical tools, which results in a reduced perceived ease of use because of these feelings. They may find the interface confusing or difficult to grasp. In most cases, discomfort is accompanied with a lack of trust in one's ability to handle technology. Because of this, users have a sense of uncertainty over their capacity to make good use of the technology, which weakens the apparent ease of use. When consumers experience a high amount of pain, they may get frustrated, which in turn causes them to see the technology as being bulky or too difficult. As a consequence, this may lead to opposition to adoption. People who are not familiar with technology may have a view that the amount of time and effort necessary to learn how to use a system is greater, which in turn may cause them to have

a lower assessment of how easy it is to use. One potential benefit is that, in very rare instances, little pain may result in more effort to learn and adapt, which may result in a modest improvement in the individual's perception of the ease of use after they have gotten accustomed with the technology. On the other hand, this is often offset by the adverse effects. This association is consistent with the Technology Acceptance Model (TAM), which asserts that unfavorable emotional reactions, such as discomfort with technology, may reduce the perceived ease of use, which in turn can have an effect on the adoption of technology.

Statements and declarations

The authors have disclosed no potential conflicts of interest regarding the research, authorship, and/or publication of this article.

Ethical considerations

The questionnaire included a 'Consent Form to Data Confidentiality', requiring respondents to sign a confidentiality agreement to keep their data confidential for the research work only. The study methods were conducted in accordance with the university's approved guidelines.

Consent to participate

The respondents / participants provided their written informed consent to participate in this study.

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Data availability

The study's original contributions are included in the article/supplementary material, and inquiries can be directed to the corresponding author.

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