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From Usability to Happiness: Examining the Mediating Role of Flow Experience in Chatbot-Assisted Online Shopping

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Abstract

AI chatbots are increasingly used by the retailers as a digital marketing tool, helpful to determine the behavioral outcomes of consumers in the form of purchase intentions or buying behavior. The study investigates the impact of chatbot usability on purchase-related happiness in the online retail shopping context, while taking flow experience as a mediator. Grounded in the Stimulus-Organism-Response (SOR) model, the study has conceptualized chatbot usability as stimulus, flow experience as organism, and purchase-related happiness as emotional response of consumers. Data was collected from online customers having an online shopping experience with chatbot interaction. The sample selection was made using a purposive sampling technique to ensure the relevant sample was selected for the study, since the application of chatbots is at an infancy stage in Pakistan and a limited number of the population has chatbot exposure and buying experience using chatbots. The analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that chatbot usability positively influences purchase-related happiness directly and via flow experience. These results confirm the significant positive impact of chatbot usability on purchase-related happiness and also the significant positive mediating impact of flow experience between chatbot usability and purchase-related happiness. The current study advances chatbot usability and purchase-related happiness literature. It also highlights the importance of designing usable chatbots to enhance the affective buying experience of online buyers.

Keywords: Chatbot Usability, Flow Experience, Purchase-related Happiness, Stimulus-Organism-Response

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1. Introduction

The organizations in this digitalized era are increasingly leveraging new technologies powered by artificial intelligence (AI) and machine learning to enhance customer experiences. Among these latest technologies, AI chatbots have emerged as a vital tool that offers scalable communication, personalized responses, and real-time assistance (Li, Fang & Chiang, 2023; Chugh & Jain, 2024; Alotaibi, 2023). Such rapid growth of AI-led chatbots has significantly changed the ways consumers interact with online retailers. In contemporary e-commerce, chatbots are not only used for routine standardized questions, but they also help consumers in a more personalized manner for product search and recommendations, order tracking, compliance handling, and overall purchase decision-making (Balaskas, 2026). With this, the online retailers are also benefitted to compete well in digital commerce by providing customers with functional convenience as well as emotionally satisfying experiences (Gomes, Lopes, & Trancoso, 2025). Thus, the chatbot usability, referred to as the extent to which chatbots are perceived as easy to use, accessible, understandable, and responsive, has become an important factor determining the online purchase experience of consumers (Fath, Abimanyu, & Misbak, 2024).

Studies have largely investigated the application of chatbots to determine the behavioral outcomes of consumers in the form of purchase intentions or buying behavior (Song & Shin, 2024; Chen, Li, Liu, & Wang, 2023). However, these studies have not investigated the emotional value attached to buying experiences. In contemporary studies of consumer behavior, purchase-related happiness has emerged as an important emotional state of consumers associated with the buying experience (Razmus, Grabner-Kräuter, Kostyra, & Zawadzka, 2022) and is different from purchase satisfaction. It is because purchase-related happiness goes beyond purchase satisfaction by capturing whether the consumer is pleased, emotionally rewarded, confident, and happy about their buying experience (Cachero-Martínez, García-Rodríguez, & Salido-Andrés, 2024).

The present study aims to investigate the relationship between chatbot usability and purchase-related happiness. A usable chatbot helps reduce confusion, save time, enhance decision confidence, and make the overall buying process more comfortable. However, this overall emotional process does not operate directly, but rather through an internal psychological mechanism, known as flow experience, which includes a state of enjoyment, concentration, perceived control, and absorption while performing a particular activity. In the online shopping context, consumers can find flow when they have a smooth and engaging experience that is free from any disruption. Thus, a usable chatbot may lead to making consumers more engaged in the buying process and enhance their purchase-related happiness. In summary, the current study proposes the following *research question*:

How does AI chatbot usability affect purchase-related happiness?

2. Literature Review

2.1 AI chatbot usability and Purchase-related Happiness

Purchase-related happiness has been defined by Mogilner and Norton (2016) as "happiness from consumption arises when the purchased product or service aligns with a consumer's values, goals, or self-concept, leading to enhanced well-being". People in developed and developing societies spend money to come out of negative emotions and improve their moods (Donnelly, Ksendzova, Howell, Vohs, & Baumeister, 2016). Thus, consumption by consumers is a goal-oriented behavior where people spend money to achieve or come closer to their goals. The cognitive behavioral model (CBM) postulates that people spend money to come closer to their goals, which they regard as important, and it helps improve their well-being (Chand, Kuckel, & Huecker, 2023). Moving forward, Self-Determination Theory (SDT) further explains that the achievement of intrinsic goals adds more to happiness than the achievement of extrinsic goals since intrinsic goals are more linked with autonomy, competence, and relatedness (Nishimura & Joshi, 2021).

Amidst the rising focus on purchase-related happiness while making online purchases, AI chatbot usability can be considered a key enabler of the positive and satisfying digital shopping experiences. Alabbas & Alomar (2024) highlighted that different dimensions of AI chatbot usability, including personalization, ease of use, reliability, and responsiveness, are helpful to enhance customer satisfaction. Dwivedi, Balakrishnan, Babbdullah, and Das (2023) discussed that AI chatbot usability enhances brand engagement and customer satisfaction. This is because highly usable AI chatbots enhance overall customer engagement and convenience levels. Le and Nguyen (2024) discussed that improved intuitive interaction and a user-friendly interface are quite helpful in making the AI chatbot interaction experience memorable for customers. Shumanov & Johnson (2021) have provided that a usable AI chatbot is helpful in improving decision-making and removing frustration while providing full control over the purchase process. Such factors are quite helpful in enhancing consumer buying experiences. This is because autonomy and competence are basic psychological needs of customers, which are offered by AI chatbot usability and are closely linked with happiness and well-being. Thus, AI chatbot usability improves customer satisfaction, reduces emotional friction, and enhances the quality of the customer journey, which are all important for post-purchase emotions like purchase-related happiness (Ranieri, Bernardo, & Mele, 2024).

Though there is an increased investigation of AI chatbot usability and customer satisfaction, customer loyalty, and trust, there is no research conducted on investigating the relationship between AI chatbot usability and purchase-related happiness (Hsu & Lin, 2023; Shahzad, Xu, An, & Javed, 2024). This oversight is quite critical since emotional gratification is a strong determinant of customer loyalty and enhances brand engagement for digital commerce. Thus, the study is timely, and it addresses a critical gap in the literature. Accordingly, the following hypothesis is proposed:

H1: There is a positive relationship between AI chatbot usability and purchase-related happiness.

2.2 The mediating role of flow experience between AI chatbot usability and purchase-related happiness

Lee & Wu (2017) have explained that a flow experience is the pleasure in the overall shopping process, which leaves a positive impact on consumers. Nurlaili & Wulandari (2024) have discussed that flow experience helps not only make purchase decisions but also influences post-purchase behavior through prompting consumers for revisit intentions. Flow experience, a psychological state, has been increasingly highlighted by the literature as characterized by deep engagement, shaping consumer behavior in a digital context (Hollebeek & Macky, 2019). Increased AI chatbot usability helps enhance user engagement through the provision of an easy-to-use experience. A usable AI chatbot minimizes interruption and also helps enhance emotional attachment and improve customer satisfaction. This state is helpful to generate a flow experience (Al-Shafei, 2025). An AI chatbot that is highly usable can offer a more conducive environment, provide greater responsiveness, and offer higher engagement, which is important to enter a flow experience. With such an immersive experience, the purchase satisfaction of consumers is increased (Dieck, Cranmer, Prim, & Bamford, 2023), likely contributing to purchase-related happiness.

In a digital environment, when consumers have a greater flow experience, they experience greater gratification and perceived enjoyment, which are core to purchase-related happiness (Serravalle, Vanheems, & Viassone, 2023). Hwang, Flow experience increases meaningful interaction, control, and sense of competence, which makes the shopping experience more pleasant and satisfying. Empirical research has shown that enjoyable experiences add to the hedonic outcome of purchases in the form of post-purchase happiness. It enhances engagement and internal fulfillment, which are fundamental to purchase-related happiness (Razmus, Razmus, & Grabner-Kräuter, 2024).

Although flow experience has received significant attention in the literature, especially in the digital environment, there is a significant gap in evaluating the direct impact of flow experience on post-purchase emotions of consumers in the form of purchase-related happiness. Additionally, literature has largely investigated the role of AI chatbot usability on consumer behavior (Jenneboer, Herrando, & Constantinides, 2022); however, there remains a notable gap in literature investigating the underlying mechanism of flow experience in determining the relationship between AI chatbot usability and purchase-related happiness. Thus, the current study has proposed the following hypothesis:

H2: Flow experience positively mediates the relationship between AI chatbot usability and purchase-related happiness such that AI chatbot usability increases flow experiences that enhance purchase-related happiness.

2.3 Theory

This study has been grounded in the Stimulus-Organism-Response theory, which provides a strong evaluation of consumer behavior in the context of digital commerce. The theory was originally proposed by Mehrabian and Russell (1974). The model explains that the external environmental stimulus affects the internal psychological state, which produces a behavioral or emotional response. In the context of consumer research, SOR has been widely used to evaluate the impact of different marketing stimuli affecting consumers' cognitive and ultimately their purchase-related outcomes (Cao & Nguyen, 2025; Koay, Cheah, & Goon, 2023). In the current study, chatbot usability is categorized as an external stimulus that provides consumers with easy navigation, quick responses, and real-time assistance. These features help reduce the efforts of customers, their confusion, uncertainty, and frustration. As consumer perceive chatbots as helpful for their purchase journey, they become a positive technological stimulus. The organism part of the model is represented by flow experience, which denotes consumers' internal psychological state while interacting with chatbots. Consumers feel more absorbed, engaged, and involved when chatbot usability is high, which implies that the chatbot not only performs a functional role but also shapes the internal experience of consumers and helps them remain engaged, thus enhancing their flow experience. The response component of the theory is represented by purchase-related happiness. As per SOR, the internal state of affairs of consumers strongly influences their behavioral and emotional response (Manthiou, Ayadi, Lee, Chiang, & Tang, 2017). In the current study, it has been assumed that when consumers experience greater flow while using chatbots, they are more likely to feel pleasant and emotionally rewarded during their buying process. Such an internal organism helps enhance their happiness. Thus, SOR provides a stronger theoretical foundation for the current research model, where chatbot usability acts as an external stimulus that enhances the internal organism state of flow experience and finally leads to the creation of a positive emotional response of purchase-related happiness. Thus, the theory has well justified the direct as well as mediating relationship between study variables, which has been drawn as under:

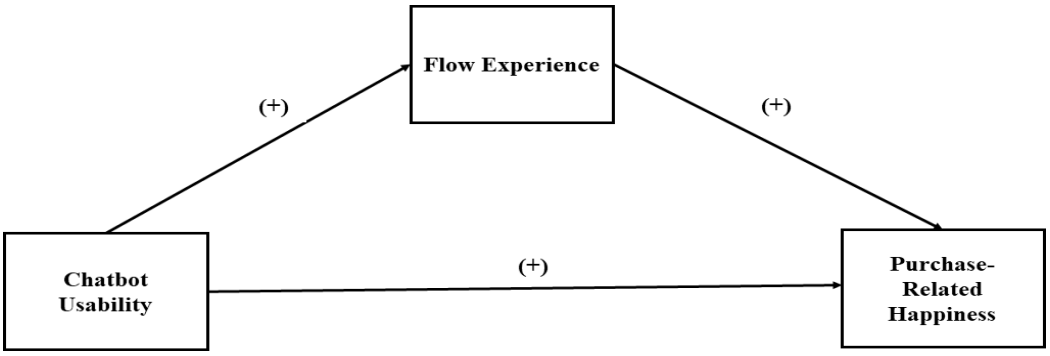

Figure 1. Conceptual Framework

3. Methods

3.1 The context

The study has been based on online retail shopping using chatbots. This is quite relevant in the Pakistani e-commerce context, since the online retail industry has been expanding in Pakistan, as the Pakistan Telecommunication Authority has reported that the telecom subscriber base has crossed 200 million, including 150 million broadband subscribers (Pakistan Telecommunication Authority, 2025), highlighting the scale of the connected digital consumer base. Accordingly, the digital e-commerce transactions have reached nearly PKR 193 million in FY2025, an increase of 30% compared to FY2024, as reported by the State Bank of Pakistan (News Desk, 2026). Such statistics revealed growing participation of consumers in digital commerce; however, the digital market has been facing behavioral and structural challenges, hindering its success. In this regard, the e-commerce policy draft of 2025-2030 identified persistent challenges of digital payments, logistics, inclusion, and trust, which are linked to consumer trust and buying experience (Ministry of Commerce, Government of Pakistan, 2025). Studies have highlighted that consumers in the Pakistani e-commerce market need reassurance while completing their digital shopping (Jamil, Qayyum, Ahmad, & Shah, 2025). In such an environment, chatbot usability can play an important role by enhancing information accessibility and providing real-time assistance. The smooth interaction of the chatbot makes the buying process more engaging and less stressful, which helps in creating a flow experience for consumers and may ultimately result in higher purchase-related happiness.

3.2 Sampling

The study has used a purposive sampling technique with an aim to ensure that the target respondents of the study have chatbot interaction experience for their online shopping. The respondents of the study included adults aged 15+ belonging to both rural and urban areas who have had AI chatbot interaction experience in the past 30 days. As AI chatbot technology is evolving in Pakistan, a limited segment of the population has exposure to AI chatbot interaction; thus, the study has initially selected a sample size of 160 respondents, which is higher than the 10m rule. After collecting data from 150 respondents, missing responses were omitted, which provided a final sample of 153 respondents.

3.3 Measurement

The study has used multi-item measures to evaluate the relationships between proposed variables. In this regard, AI chatbot usability has been measured using the 8-item AI chatbot Usability Questionnaire (CUQ) scale, known as the ALMA AI chatbot test tool (Holmes, Moorhead, Bond, Zheng, Coates, McTear, 2019). Purchase-related happiness has been measured using a 2-item scale adopted from van Boven & Gilovich (2003) and Nicolao, Irwin, and Goodman (2009), while flow experience has been measured using a 3-item scale developed by Davis (1989) and Hsu and Lu (2004).

3.4 Data Analysis

The analysis of collected data has been performed in Wrap PLS for Partial Least Squares Structural Equation Modeling (PLS-SEM). In this regard, the measurement model has been first analyzed for reliability and validity tests, while in the next step, the structural model has been examined through path coefficients, model fit indices, and mediation analysis to test the indirect effect of flow experience between chatbot usability and purchase-related happiness.

4. Results

The collected data has been analyzed for validity and reliability through different statistical methods. For this purpose, factor loading (FL), composite reliability (CR), and average variance extracted (AVE) tests have been performed.

Table 1: **Reliability and Convergent Validity**

Construct	Composite Reliability	Cronbach's Alpha	AVE	Full collinearity VIF
Chatbot Esability	.914	.892	.571	1.734
Flow experience	.866	.767	.684	1.851
Purchase-Related Happiness	.897	.770	.813	1.587

AVE = average variance extracted.

Table 1 indicates that all constructs have strong internal consistency. In this regard, the values of composite reliability are all higher than 0.7 while Cronbach's Alpha values are also higher than 0.7, confirming strong internal reliability of constructs. Meanwhile, convergent validity is also established since the average variance extracted for all three constructs is also higher than the threshold limit of 0.5. Finally, the full collinearity VIF values range between a.587 to 1.851, lower than the conservative threshold of 3.3, confirming the absence of multicollinearity and common method bias.

Table 2: Indicator Loadings

Indicator	Usability	Flow experience	Purchase-Related Happiness	*p* value
Usability1	**.694**			<0.001
Usability2	**.729**			<0.001
Usability3	**.677**			<0.001
Usability4	**.805**			<0.001
Usability5	**.830**			<0.001
Usability6	**.807**			<0.001
Usability7	**.753**			<0.001
Usability8	**.737**			<0.001
Flow Experience1		**.801**		<0.001
Flow Experience2		**.890**		<0.001
Flow Experience3		**.786**		<0.001
Purchase-Related Happiness1			**.902**	<0.001
Purchase-Related Happiness2			**.902**	<0.001

Note: All loadings were statistically significant at p < .001.

The convergent validity has been proved through factor loading and cross-loading. In this regard, all three constructs have been found to load on their respective constructs with p < 0.001. Additionally, the factor loading is higher than the threshold limit of 0.7 for almost all items except usability1 and usability3; however, they are also closer to 0.7, thus, are acceptable. Contrarily, cross-loadings are lower than the main loadings, indicating strong convergent reliability of constructs.

Table 3: Discriminant Validity: Fornell-Larcker Criterion

Construct	Usability	Flow experience	Purchase-Related Happiness
Chatbot Usability	**.756**	.615	.524
Flow Experience	.615	**.827**	.566
Purchase-Related Happiness	.524	.566	**.902**

Note: Diagonal values in bold are square roots of AVEs. Off-diagonal values are correlations among latent variables. All reported correlations were significant at p < .001.

The discriminant validity has been confirmed using the Fornell-Larcker test. The results have shown that the square root of AVE for each construct is higher than its correlation with other constructs. These results evidenced that each construct is significantly different from the others.

Table 4: **Model Fit and Quality Indices**

Fit/quality index	Value	Criteria
Average path coefficient (APC)	.436, $p < 0.001$	$p < 0.05$
Average R-squared (ARC)	.390, $p < 0.001$	$p < 0.05$
Average adjusted R-squared (AARS)	.384, $p < 0.001$	$p < 0.05$

The model fit and quality indices are acceptable, and APC, ARS, and AARS are statistically significant at $p < 0.001$. Thus, the model paths and the variance explained are all significant and meaningful.

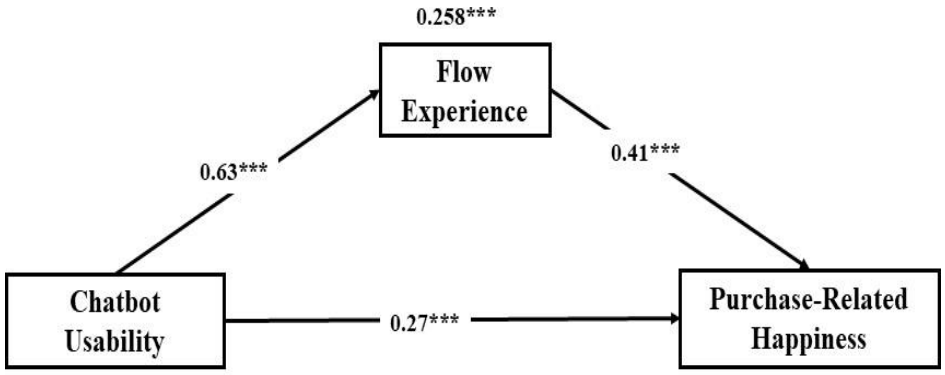

Figure 2: Measurement Model

Table 5: Structural Model Results

Hypothesized path	*β*	SE	*p*	Result
Chatbot usability → Flow experience	.632	0.071	< .001	Supported
Chatbot usability → Purchase-related happiness	.267	0.076	< .001	Supported
Flow experience → Purchase-related happiness	.409	0.074	< .001	Supported

The results of the structured equation model have shown that all the direct paths are significant and positive at $p < 0.001$. In this regard, chatbot usability has a strong and significant positive impact on flow experience ($\beta = 0.632$, $p < 0.001$), indicating that chatbot usability helps enhance the flow experience of consumers during online shopping. Additionally, chatbot usability has a significant direct positive impact on purchase-related happiness ($\beta = 0.267$, $p < 0.001$), highlighting that chatbot usability has a significant positive direct impact on customers' purchase-related happiness. Furthermore, flow experience also has a direct positive and significant impact on purchase-related happiness ($\beta = 0.409$, $p < 0.001$), suggesting that consumers who are absorbed and engaged while using chatbots feel greater purchase-related happiness. These results provided strong positive and significant direct impact of all constructs on purchase-related happiness, thus establishing initial support to test the mediating role of flow experience between chatbot usability and purchase-related happiness.

Table 6: Indirect Effect and Mediation Result

Indirect path	*β*	S.E	*P*	Result
Chatbot usability → Flow experience → Purchase-related happiness	.258	0.054	< 0.001	Partially Supported

The mediation results have shown that flow experience significantly mediates the relationship between chatbot usability and purchase-related happiness since the indirect impact is positive and significant ($\beta = 0.258$, $p < 0.001$). However, the direct impact is also significant ($\beta = 0.267$, $p < 0.001$), indicating partial mediation, not full mediation.

5. Discussion

The results of this provided empirical support for the application of the SOR framework, confirming the direct and indirect positive significant impact of chatbot usability on purchase-related happiness through flow experience. The positive significant impact of chatbot usability on flow experience indicates that customers are more likely to be absorbed, engaged, and feel in control when the chatbot is more usable, i.e., easy to use, helpful, and responsive. These findings are consistent with Le and Nguyen (2024), who reported that a user-friendly chatbot is helpful to enhance customers' shopping experience and their continuation intentions. In the present study, chatbot usability has acted as a digital stimulus that helped consumers to get engaged and reduce distractions in the overall buying process.

Secondly, chatbot usability has also provided a significant direct impact on purchase-related happiness, which implies that consumers do not consider chatbots only a technological tool; rather, they attach their emotional buying response to the convenience, clarity, and responsiveness provided by chatbots. Similar results have been provided by Alabbas and Alomar

(2024) as well as Dwivedi et al. (2023), arguing that chatbot usability and engagement help improve customer satisfaction and their overall buying experience. This is also because the chatbot, through its personalized recommendations, provides reassurance to customers, which helps in reducing uncertainty; thus, the buying process becomes emotionally rewarding and more pleasant.

The positive significant relationship between flow experience and purchase-related happiness confirmed that consumers who are more engaged and feel control while interacting with chatbots during their online buying journey are more likely to be happy with their purchase. These findings support the earlier findings of Lee and Wu (2017), who found that consumers feel happy while they are absorbed in the online buying process. The findings are also aligned with Razmus et al. (2024), who reported that consumers report positive post-purchase emotions or feel joy and excitement when they comfortably complete their online buying process.

The findings of the mediation analysis provided that flow experience partially mediated the relationship between chatbot usability and purchase-related happiness since both the direct and indirect paths are significant. It implies that chatbot usability contributes to purchase-related happiness through both routes, which include a direct functional route and another experiential route. The direct route highlights the immediate benefits of chatbot usability, while the indirect path reflects the psychological experience created by the chatbot, immersing consumers in the chatbot usage, thereby enhancing their purchase-related happiness. These findings fully explain the SOR framework, where chatbot usability acts as a stimulus, flow experience is the organism stage, which creates purchase-related happiness, an emotional response of the consumers. Thus, chatbot usability not only creates purchase intentions but is also quite meaningful to enhance consumers' purchase-related happiness with the help of flow experience.

6. Practical Implications

The study offers useful implications for managers and chatbot designers in the e-commerce context. In this regard, online retailers should take chatbots as an experience-enhancing tool instead of merely a response tool for customers. Chatbots should be designed in a way that can provide quick, relevant, and clear responses to customers to better complete their purchase journey. Improvement in chatbot usability through improving chatbot design and making it more personalized is helpful to reduce uncertainty, provide customers with better control, and smooth the buying process. Additionally, the significant positive impact of flow experience requires managers and chatbot designers to make chatbot interactions more engaging and enjoyable. These findings and implications are highly important and relevant in the Pakistani context, where online shoppers need greater information and enhanced reassurance before completing their purchase process.

7. Limitations and Future Research

Despite its greater implications, the study has certain limitations. In this regard, the study has adopted a cross-sectional research design; thus, the causal interpretation remains cautious. To overcome this limitation, a longitudinal research design needs to be adopted to better understand the impact of chatbot usability over time. Secondly, the study has been conducted in the Pakistani context, which may limit its generalizability to other countries with different cultures and chatbot technology maturity. Future research may be conducted to compare the findings of a developed and a developing country. Furthermore, this study has taken flow experience as the only mediating mechanism; other psychological factors like trust, perceived risk, perceive enjoyment can also be taken in future studies to better understand the relationship between chatbot usability and purchase-related happiness.

8. Conclusion

The study has shown that chatbot usability is helpful to positively influence purchase-related happiness using flow experience as a mediating mechanism in the e-commerce context. The results have revealed that chatbot usability significantly positively enhances both flow experience and purchase-related happiness, while flow experience also makes a positive direct impact on purchase-related happiness and acts as a mediator between chatbot usability and purchase-related happiness. These results suggest that when chatbots are easy to use, responsive, and engaging, they bring greater happiness for customers. In this way, the study has significantly extended the research of chatbot usability from behavior outcomes like satisfaction and purchase intentions to emotional outcomes. Additionally, it has also added to the literature of purchase-related happiness by studying it in the context of the latest technology usage, beyond its examination in the context of product categories. Moreover, it has also supported the application of SOR in the chatbot usability context, taking it as a digital stimulus to influence the shaping of consumers' emotional response. In this way, the study has significantly highlighted the importance of designing chatbots that are usable and emotionally engaging.

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