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Effects of Tourists' Perceived Crowding on Tourist Loyalty Based on Overcrowded Tourist Attraction in Bangladesh: The Mediating Role of Destination Attractiveness

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ABSTRACT

For the study, the researchers proposed a multidimensional way to measure tourist-perceived crowding (TPC) and an integrated approach to tourist loyalty from a customer perspective based on the stimulus organism response model. A structural equation modeling was applied to examine the relationship among variables using the data collected from Bangladesh's crowded and popular tourist attractions. The study found that neutral crowding has significant negative effects and personal crowding has significant positive effects on destination attractiveness, but social crowding has no relationship with destination attractiveness. Moreover, social crowding directly affects tourist loyalty, but neutral and personal crowding indirectly affect tourist loyalty by mediating destination attractiveness. This study suggested a new result: TPC has both negative and positive impacts on destination attractiveness in overcrowded destinations. From the management perspective, the study suggested interesting insights for crowding and destination management, which ultimately affect tourist loyalty.

1 | Introduction

Population boom and urbanization are familiar phenomena worldwide, leading to a more crowded era (L. Zhang et al. 2023; Sinha 2023). Hence, the crowding issue has a serious impact on security (Booth, Bosher, and Chmutina 2023), tourist satisfaction (Lin et al. 2023), destination image (Masroor and Shiva 2024), and overall tourist perception of a tourist destination, and it has gained scholars' attention (Baldin, Bertocchi, and Camatti 2024; Jacobsen, Iversen, and Hem 2019; L. Li et al. 2017; Ud Din, Nazneen, and Jamil 2024; Yin et al. 2020). Hence, crowded feelings of tourists in a place are referred to as perceived crowding, and a negative subjective assessment of density is defined as perceived crowding (Stokols 1972). It has a detrimental impact on the motivation of tourists. Therefore, tourism researchers have identified and agreed that the perception of crowding measures the quality of the tourist experience (Manning 2022). Nowadays, people are engaging more in tourism activities. Therefore, tourism has gained popularity rapidly in recent years. As a consequence, tourist-perceived crowding (TPC) concerns have gained importance in research. Moreover, few studies only relate to the effect of perceived crowding on attractiveness and intention to revisit (Ma et al. 2018; Yin et al. 2020). Moreover, crowding has been found to hurt the attractiveness of destinations in some research (L. Li et al. 2017; Rathnayake 2015; Kálmán and Grotte 2023), while others reported mixed effects. Social crowding, although it can lead to a negative destination

image, may also engender positive consequences in terms of its relation with place love (Masroor and Shiva 2024; Issakov et al. 2024). In addition, crowding issues are essential and impact both tourists' satisfaction and the management of sustainable tourism development (Jin, Hu, and Kavan 2016).

In South Asian countries especially, Bangladesh is a crowded country with a population of approximately 172.29 million (World Bank 2023). Moreover, Travel and Council (2021) reports that tourism is one of the fastest growing industries in Bangladesh, creating one in four net new jobs between 2014 and 2019. Travel and Council (2021) also reported that 97% (USD 5313.3 million) of Bangladesh tourist spending was local and 3% (USD 142.9 million) foreign in 2020. Domestic tourist spending is crucial to developing countries like Bangladesh's tourism sector (USAID/Bangladesh, 2019). Due to its geographical position, Bangladesh has a long coastline and is popular in ocean-based tourism. Among them, Cox's Bazar is Bangladesh's most popular and crowded tourist place. Moreover, Cox's Bazar Sea Beach attracts approximately 5 million visitors nationwide and worldwide during the year's peak season (M. E. Hossain, Quaddus, and Shanka 2015), and residential spaces are full during the season. Moreover, according to Islam (2021), Cox's Bazar has various visitor places and has become Bangladesh's most frequently and repeatedly visited tourist destination. Therefore, we selected this overcrowded and most frequently visited tourist destination for crowding research. We found a theoretical model for extending the new knowledge in crowding literature and its related outcomes. Moreover, there are no more studies on crowding research in the context of Bangladesh, so this could be a unique study about TPC in Bangladesh to the best of the author's knowledge. There are few studies in Bangladesh about tourists' environmentally responsible behavior and satisfaction (Sahabuddin et al. 2021), tourist satisfaction and loyalty relationship (Hasan et al. 2019a, 2019b). However, it is important in the context of Bangladesh due to the huge population and the large number of domestic tourists in the destination.

Many research works highlight the tourism crowding issues, such as its impact on satisfaction (Kılıçarslan and Caber 2018; A. Liu and Ma 2019), revisiting whale watching (Avila-Foucat et al. 2013; Pikkemaat, Bichler, and Peters 2020), and place attachment (Sharp, Sharp, and Miller 2015). Other relevant studies are human versus spatial crowding on the satisfaction of visitors on festivals (D. Kim, Lee, and Sirgy 2016), tourist crowding and sustainable tourism destination management (Jin, Hu, and Kavan 2016), hotspot crowding and overtourism (Jacobsen, Iversen, and Hem 2019; Remenyik et al. 2021), overcrowding, and environmental eradication (Rathnayake 2015). Another recent study is about crowding, emotions, satisfaction, and loyalty in managed cities. Another relevant study is on loyalty formation in creative tourism (Suhartanto et al. 2018), destination satisfaction and revisit intention (Seetanah, Teeroovengadum, and Nunkoo 2020), destination attractiveness (DA), and environmentally responsible behavior: loyalty as mediation (H. C. Wu et al. 2022). Moreover, recent studies are on crowding and satisfaction (Küçükergin and Koç 2024), crowding and place displacement (Y. Cheng et al. 2024), and undertourism and place attachment on life satisfaction. In addition, a recent study on destination loyalty with place attachment, destination familiarity, and image ignored TPC as antecedents. Hence, a substantial literature gap exists in the existing studies about perceived crowding, DA, and loyalty relationships. Prior studies have suggested that crowding also has a weak or inexistent relationship with visitor satisfaction and loyalty (Manning 2011). Therefore, it is vital to investigate these aspects, such as perceived crowding, DA, and tourist loyalty, in detail.

Moreover, DA is a critical antecedent that influences how tourists feel and behave while visiting a place. Tourists' perceptions, attitudes, feelings, beliefs, and opinions regarding a destination and its capacity to meet their demands are treated as DA (Reitsamer, Brunner-Sperdin, and Stokburger-Sauer 2016; Ghorbani et al. 2023). Therefore, tourists' emotions are closely tied to the aesthetic appeal of natural tourist attractions, a confluence of different sentiments and visual characteristics of the perceived scenery. Moreover, customer loyalty conceptualization is the combination of behavior and attitude, which is the relationship denoting a person's behavior and their likelihood to return to a business (Dick and Basu 1994). Hence, this customer loyalty concept is used in this study and applied to tourist loyalty in tourism studies. Three main components are thought to make up tourist loyalty such as attitudinal, behavioral, and composite loyalty (H. Zhang et al. 2014).

Despite the contribution of existing studies to expanding our knowledge of tourist loyalty, most of the research has sampled first-time visitors to capture attitudinal loyalty (Yi et al. 2018). Hence, this study addresses this methodological gap in capturing destination loyalty as customer loyalty perception.

With the study's purview, we identify two research questions: First, how do TPC (neutral crowding, personal crowding, and social crowding) respond to DA? Second, how are tourists' perceptions of crowding and loyalty to a place related to where DA plays a role? Therefore, the study's main purpose is to find the direct and indirect effects of TPC on tourist loyalty where DA plays a mediation role. Hence, specifically, the objectives of the study are as follows:

a. To determine the direct effects of TPC (neutral, personal, and social crowding) on tourist loyalty in overcrowded tourist destinations.

b. To find the effects of TPC (neutral, personal, and social crowding) on tourist loyalty by mediating the DA.

For this study, perceived crowding is divided into social, personal, and neutral crowding, as defined by L. Li et al. (2017). In the previous study on crowding, neutral and personal are addressed, but social crowding is ignored. This study uniquely contributes to the existing tourism literature in that perceived crowding is defined in a multidimensional way as neutral, personal, and social crowding. The study is also unique in that it applies the stimulus organism response (SOR) model in analyzing perceived crowding in the relationship of DA and, ultimately, effects on tourist loyalty when the destination is overcrowded during holidays and vacations.

2 | Literature Review and Hypothesis Development

2.1 | Perceived Crowding

According to the stimulus overload theory, crowding arises when environmental stimuli surpass an individual's carrying capacity (Desor 1972). Mass tourism is sometimes criticized for damaging the host community's social, cultural, and environmental structure (Honey 2008). Literature also reveals that perceived crowding negatively affects tourists' perceived value, customer satisfaction, and destination loyalty, as well as perceived value, customer satisfaction, and loyalty, which are positively correlated in World Heritage Sites (WHS) (Phi, Phuong, and Huy 2024). Therefore, there are positive or negative effects of perceived crowding on the postvisit behaviors of tourists (Nie et al. 2022; Papadopoulou, Ribeiro, and Prayag 2023). Additionally, in a broad sense, crowding has an emotional and psychological impact on customers' behavioral responses (Ellahi et al. 2023). Moreover, it also showed an inverted U-shaped link between perceived human crowding and festival experience, while perceived spatial crowding continuously negatively influences festival enjoyment (H. Cheng, Liu, and Bi 2021).

Moreover, there is no consensus in the existing literature on crowding issues. However, in general, crowding hurts tourist satisfaction, DA (L. Li et al. 2017), and loyalty (Avila-Foucat et al. 2013). B. Shelby (1980) expressed that crowding research should consider tourists' social, environmental, and psychological elements. For instance, older tourists have a higher tolerance limit than junior tourists regarding crowding (Jacobsen, Iversen, and Hem 2019); males have a comparatively greater tolerance limit than female tourists in crowding issues (Zehrer and Raich 2016); further, Asian and African tourists have relatively higher crowding tolerance than European tourists (Fleishman, Feitelson, and Salomon 2004), and Chinese tourists surpass the Taiwanese and other international tourists concerning overcrowding tolerance (Sun and Budruk 2017). In line with the findings of social psychology, high perceived crowding affects cognitive control and behavioral and affective response in and after those circumstances (Langer and Saegert 1977). Motivation is also vital to tourism research, as it facilitates understanding tourist behavior and psychology (Jin and Pearce 2011). Tourists are generally triggered to travel to destinations for various motives (e.g., relishing solitude and appeasing anxiety), and perceived crowding happens if tourists' expectations get disrupted by the extreme crowdedness of a destination.

Furthermore, Stokols (1976) interpreted crowding as "thwarting", which refers to the arousal of frustration and depression in a person due to intervention with his or her functions or intents. He proposed two kinds of aversions: neutral thwarting and personal thwarting, which are treated as neutral perceived crowding and personal perceived crowding. Whereas neutral crowding is an infringement of spatial demands associated with the physical environmental aspect, personal crowding violates one's aspirations of the capacity of the social environment and the tourist experience of conflict with others (L. Li et al. 2017). In a tourist environment, tourists typically compel more slots to achieve their goal of relishing the natural beauty or scenery than in a place like a shopping environment. Hence, when there are too many people around tourists or unsuitable interactions with other tourists, people may lose the enjoyment of the aesthetic or scene (Manning 2022). Therefore, conflicts among tourists may occur due to close contact with other tourists and cause a tourist's enjoyment goal to be violent.

Nevertheless, this aspect is ignored by other studies in the literature. Therefore, in addition to two types of crowding, social crowding is treated as the third dimension of tourists' perceived crowding (TPC) (L. Li et al. 2017). When the destination is nature-based tourism, social crowding is an important dimension.

2.2 | SOR Framework

The SOR model proposed by Mehrabian and Russell in 1974 is applied as the foundation for framing the conceptual model of this study. In tourism research, the SOR model is popular and has been used extensively (S. Hossain et al. 2023; Hsiao and Tang 2021; Hsu, Agyeiwaah, and Chen 2021; Jathe, Gjerald, and Øgaard 2022; M. J. Kim, Lee, and Jung 2020; Laato et al. 2020; X. Wu and Lai 2022; Yin et al. 2020; Zhai, Wang, and Ghani 2020). This study is an extension of the study of TPC and DA and revisits intention (Yin et al. 2020) but ignores tourist loyalty as a comprehensive definition. Moreover, a study uses the SOR model with the relationship between DA and loyalty but ignores tourist crowding (H. C. Wu et al. 2022). Therefore, to fill the gap, we apply the SOR model to frame the relationship of TPC, DA, and tourist loyalty.

Therefore, the SOR model states that individual behavior is described and illustrated as a learning feedback to external stimuli and as a generator of interior states in the SOR framework (Mehrabian and Russell 1974). According to the existing research, a person's internal state (such as an emotion) is triggered by an external stimulus. Stimuli are external environmental factors that cause changes in individuals' internal states. Hence, the organism, also known as the intrinsic state, is the internal experience of an individual's affective cognition, which comprises cognitive and affective states (Zhao, Wang, and Sun 2020; Zheng et al. 2019). Furthermore, cognitive situation relates to speculations focused on information processing, while the affective state refers to feelings, and the response state is the result or outcome of behavior (Benlian 2015). It is argued that tourists perceive crowding as a stimulus, which is an environmental factor. The organism factor is destination image or attractiveness, which affects customers' return intentions or actual repeat visits (Manthiou et al. 2017). The research argues that due to a tourist's all-inclusive cognition and perception of a destination (Ma et al. 2018), DA is treated as an organism from the cognition context. Moreover, tourist emotions can be provoked by DA. Furthermore, the attractiveness of nature-based destinations would affect tourists' emotional performance. Tourists' positive DA impressions drive repeat visits and word of mouth. When a destination meets visitors' travel needs and expectations, positive DA impressions will lead to longer stays, repeat visits, intention, and positive WOM intention, demonstrating loyalty to the destination (Suhartanto et al. 2020). As a result, DA is the organism factor that directly affects customer loyalty.

According to Gursoy, Chen, and Chi (2014), loyalty is a psychological articulation of a tourist's revisit intention and recommendation other tourists revisit a destination, identified as attitudinal loyalty. Behavior loyalty is the behavioral outcome, such as a repeat visit (Mohamad et al. 2015). The third approach is the integration approach of loyalty, which combines attitude and behavioral approaches (Iwasaki and Havitz 1998) and provides insights into tourist loyalty as past, current, and future (H. Zhang et al. 2014). Hence, it is considered a response factor for this purpose of study. Loyal tourists not only have positive attitudes toward the destination, repeat revisits, and positive WOM (Coetzee and Pourfakhimi 2020) but also promote sustainable tourism development that will help locals and meet sustainable development goals (Ramkissoon and Sowamber 2020). Hence, in Figure 1, we drew a conceptual framework by introducing stimulus, organism, and response factors and illustrating how these factors are interconnected.

2.3 | TPC and DA

Ruiz et al. (2021) emphasize that crowding is a subjective evaluation that considers environmental impact, loss of privacy, behavioral constraints, and personal autonomy. Such feelings negatively impact the destination's attractiveness (L. Li et al. 2017). Furthermore, it is inferred that human crowding of a destination will seemingly influence tourists' emotional states (D. Kim, Lee, and Sirgy 2016), whereas physical crowding of a particular destination attraction would also affect the health of tourists (Booth and Cowell 1976). Moreover, Yin et al. (2020) reported that perceived risk and experience quality strengthen the effect of crowding on DA. Furthermore, Zeraib, Kouba, and Berghout (2022) also mentioned that most visitors are satisfied with the pricing, but local aspects like nature, monuments, traditional food, and apple purchases make the destination popular. Tourism development initiatives' accommodation, entertainment, communication, and transportation services dissatisfied visitors. According to Zhan et al. (2024), the attractiveness of a park positively influences perceived crowding as an antecedent of crowding perception. More attractive parks typically draw larger crowds, which unintentionally contributes to congestion. Along with density and crowding, "norm" is an evaluation measure that establishes whether a certain crowding condition is appropriate or inappropriate, desirable or rejected, and acceptable or intolerable. Social standards and individual preferences interact to form norms, so while some visitors can cope with crowds and circumstances, others cannot (T. K. Yoon et al. 2024).

There is no unanimity in the existing literature on crowding concerns. Literature also found a different result, which is that high social density may create a stimulating atmosphere and situation for social interaction in some settings and for certain holidaymakers (D. Kim, Lee, and Sirgy 2016). Moreover, cruise passengers have more crowding tolerance limits than self-organized tourists (Jacobsen, Iversen, and Hem 2019). Nowadays, this dilemma provides insights for the current researcher examining the extent to which people's density might influence visitor appraisals of hotspot destinations, popular places where many visitors might be satisfied to be part of a mass gathering. Moreover, negative feelings of crowding are a problem, but positive feelings of experience are important in urban tourism (Popp 2012). However, crowding generally has an unfavorable impact on tourist satisfaction, DA (Rathnayake 2015), and loyalty (Avila-Foucat et al. 2013). Therefore, visitors are avoiding crowding. Subsequently, perceived crowding lowers the quality level of tourists' perceived service experiences and reduces the attractiveness of destinations (Neuts and Nijkamp 2012). Accordingly, hypotheses H1a, H1b, and H1c are proposed here below:

H1a. *Neutral crowding has a negative effect on destination attractiveness.*

H1b. *Personal crowding has a negative effect on destination attractiveness.*

H1c. *Social crowding has a negative effect on destination attractiveness.*

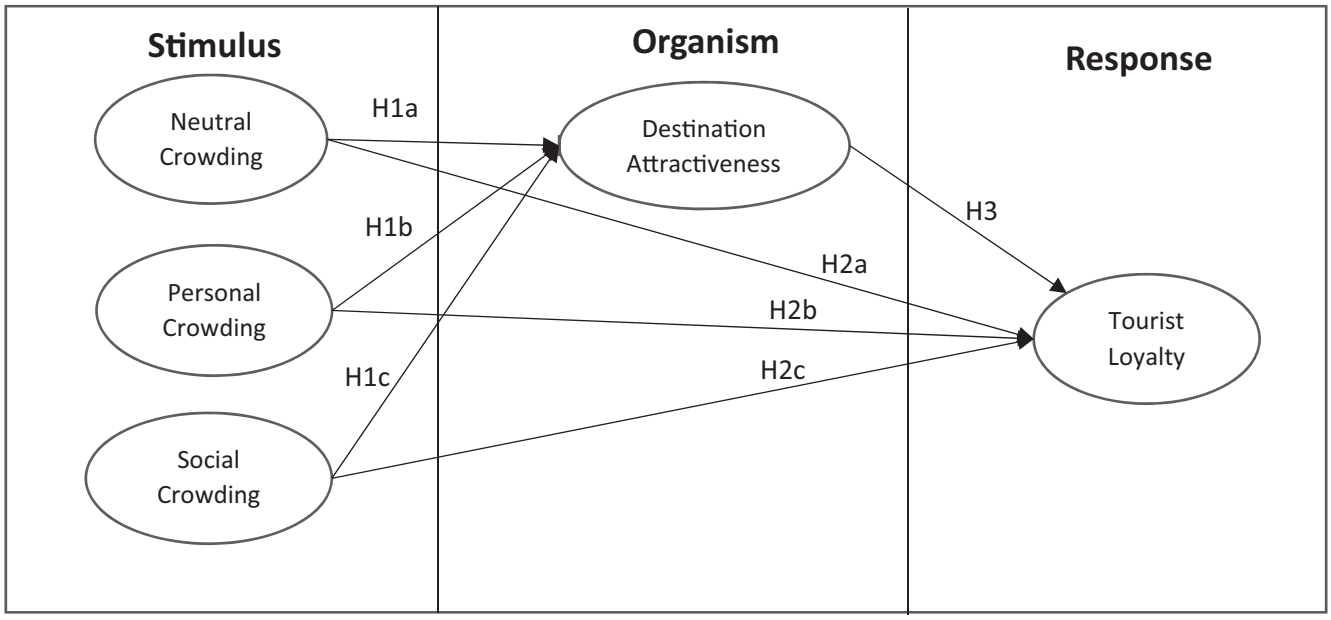

FIGURE 1 | Conceptual framework.

2.4 | Crowding and Tourist Loyalty

Crowding can increase anxiety and lessen pleasure, causing visitors to dislike it (H. Cheng, Liu, and Bi 2021). More importantly, these perceived congestions reduce the desire to revisit and indirectly affect this intention through the satisfaction level (Zhan et al. 2024). Prior research suggests that most Western cultures and North Americans realize crowding adversely and perceive it as an obstacle to experiencing outdoor activity (J. I. Yoon et al. 2021). In addition, in evaluating the marketing mix, factors of street food, nationalities, and education levels are important and have significant differences based on these variables (Praesri et al. 2022). However, in general, crowding is assumed to erode the tourist experience.

A recent study showed that tourist crowding affected loyalty, which was indirect and mediated by satisfaction. Most of the studies examined the indirect link between crowding and loyalty through satisfaction, so there is a missing link to the crowding and loyalty relationship directly. Moreover, revisit intention is considered by various promising factors such as satisfaction, perceived quality experience, past holiday experience, DA, local cultural values, and expectations (Assaker, Vinzi, and O'Connor 2011; Kupi and Bakó 2023). According to Avila-Foucat et al. (2013), studies identified that travelers with perceived crowding could be affected negatively and less inclined to revisit whale-watching. Vessel crowding would be puzzling as it would start reducing the desire to return for future whale-watching and would alter the whale behavior. There is a missing link in how crowding (neutral, personal, and social) affects tourist loyalty as attitudinal, behavioral loyalty, and both together, as most of the studies show only revisit intention where satisfaction plays a mediating role (Zhan et al. 2024).

Furthermore, behavioral intentions (Flavián, Ibáñez-Sánchez, and Orús 2019), revisit intention and loyalty (Jani and Han 2014), and purchase intention (Rodríguez-Torrico et al. 2020) have all been included as response factors in prior studies. However, there is a missing link to how tourist loyalty is impacted by overtourism and DA. A recent examination of crowding perception showed that satisfaction and behavior-related consequences are the most investigated categories, while post-experience behavior, like intention to revisit, recommend, or complain, is not comprehensive (Dogru-Dastan 2024). Therefore, examination of the effects of crowding on customer satisfaction and loyalty in the context of the service sector is crucial due to the inconsistent impacts of crowding in previous studies (Asghar Ali et al. 2021; Ellahi et al. 2023). Furthermore, local visitors tolerated recreation encounters better than nonlocals. Crowding indirectly affects facility and service satisfaction (Buta and Bustam 2024). Several reviews suggested crowding-related visitor satisfaction and behavior changes (Blut and Iyer 2020; Dogru-Dastan 2022). Tourists may also react to congestion by avoiding visits (Fleishman, Feitelson, and Salomon 2007). Therefore, for the purpose of the study, the hypotheses are as follows:

H2a. *Neutral crowding has a negative effect on tourist loyalty.*

H2b. *Personal crowding has a negative effect on tourist loyalty.*

H2c. *Social crowding has a negative effect on tourist loyalty.*

2.5 | DA and Tourist Loyalty

Researchers' prior works identified that DA influences destination loyalty (Akroush et al. 2016). The research shows that Can Tho City's tourism attractiveness depends on the natural environment, local culture, cuisine, recreational activities, infrastructure, service price, tourism promotion, and community (Hai, Nguyen, and Huyen 2023). Moreover, a study indicated that food may promote a destination and improve tourists' experiences (Thio, Jokom, and Widjaja 2024). It has become trendy for tourism researchers to inspect this destination's attractiveness and loyalty construct in recent years. Hence, the destination experience is figured out as a product; tourists may desire to revisit the destination or represent it positively to friends, relatives, neighbors, and so on (Suhartanto et al. 2018; Wang et al. 2020). Tourist DA significantly increased attitudinal and behavioral loyalty and ecologically responsible behavior (H. C. Wu et al. 2022). It generates an appealing image with competitive advantages, promising tourists an outstanding experience and subjective well-being (Mikulić et al. 2016; Uysal, Berbekova, and Kim 2020). The significant contribution of DA to destinations has been viewed as an antecedent to understanding the various attitudes and behaviors of tourists, such as place attachment (Ramkissoon 2015), destination loyalty (J. Li et al. 2020; Nasir et al. 2020; Suhartanto et al. 2020; Wang et al. 2020), destination image (D. Kim and Perdue 2011), destination attachment (Reitsamer, Brunner-Sperdin, and Stokburger-Sauer 2016), and environmentally responsible behavior (H. C. Wu et al. 2022). For example, J. Li et al. (2020) identified that festival attractiveness has a positive direct link and effects on destination loyalty. Moreover, the attractive destination for visitors has a direct link to revisit intention. Therefore, revisiting intention and recommending other tourists are operational level loyalty and commonly treated as tourist loyalty (Bigné Alcañiz, Sánchez García, and Sanz Blas 2009). Tourists loyal to a particular destination have a positive attitude about it. Hence, the hypothesis is as follows:

H3. *Destination attractiveness positively affects tourist loyalty.*

2.6 | Mediating Role of Destination Attractiveness

A stimulus of the SOR model can influence an emotional reaction in an organism, and so an organism would react to the response. This string suggests that an individual emotional reaction, which is the organism, could mediate in this model (Yin et al. 2020). Hence, an external stimulus is the destination's attractiveness, which causes visitors to adopt favorable attitudes and have enjoyable and memorable travel experiences (Imamović, Araújo de Azevedo, and Miguel Barbosa de Sousa 2021). Therefore, emotional performance influences DA (H. C. Wu et al. 2022). Tourism's core product is the tourist's experience of the destination, hence, competition within the industry is centered on the destination (Z. Liu et al. 2024). Overall, the destination is attractive and includes resources, infrastructure, and management. Tourists have various preferences for DA. Thus, destinations' offers must meet their needs to attract them (Z. Liu et al. 2024).

Prior literature exposed that DA positively influences revisit intention (Ma et al. 2018) and perceived DA mediates the relationship between perceived crowding and tourist satisfaction (L. Li et al. 2017). In addition to direct relationships, the study examined the link between DA and tourist loyalty by mediating other factors (Chi and Qu 2008). A review reports that substantial research on post-experience behavior as a response to crowding includes intention to revisit, positive word of mouth or complaint, affiliation, as well as emotions and satisfaction as mediators (Dogru-Dastan 2024). Therefore, there is a missing link between crowding, DA, and loyalty relationships. Therefore, there is a relationship between TPCand loyalty, and DA might act as a mediator between the two. Therefore, the hypotheses are as follows:

H4a. *Destination attractiveness mediates the relationship between neutral crowding and tourist loyalty.*

H4b. *Destination attractiveness mediates the relationship between personal crowding and tourist loyalty.*

H4c. *Destination attractiveness mediates the relationship between social crowding and tourist loyalty.*

3 | Methodology

3.1 | Survey of the Research Area

The study area is Cox's Bazar, which is the world's longest natural seashore and is famous for its outlandish features as a sparkling tourist destination in Bangladesh. The beach area in Cox's Bazar is 120 km long, and it slopes gently down to the blue waters of the Bay of Bengal next to the scenic backdrop of a sequence of hills covered with deep green forests (M. E. Hossain, Quaddus, and Shanka 2013). This place is the most visited and overcrowded tourist destination in Bangladesh, especially on vacations and holidays. The accommodation and hospitality arrangements, such as hotels, motels, and restaurants, in this destination are for national and international tourists. The Bangladesh Bureau of Statistics reported in 2021 that 17% of the country's population, or 3 million, visit Cox's Bazar annually (Uddin 2022). It is the most crowded tourist destination in Bangladesh. Hence, for tourism research, particularly tourist crowding research, this destination is appropriate and representative.

3.2 | Sampling and Data Collection

To examine the effects of crowding perceptions on tourists' loyalty, a questionnaire survey was conducted. Moreover, we applied a quantitative research method with the cross-sectional survey with the structured self-administered questionnaires. Despite certain limitations, self-administered questionnaires and self-reported surveys represent the most common and acceptable techniques for behavioral research collection (Cooper et al. 2020). The survey was conducted with the tourists who traveled to Cox's Bazar from May 2022 to October 2022 during weekends, vacations, or holidays in Bangladesh from 9.00 am to 8.00 pm when the sea beach areas are most crowded. Therefore, the researchers for this study designed face-to-face interviews with this questionnaire for tourists who were in the place to enjoy the scenic beauty of the destination, especially the ocean view and hill views together. A field survey was conducted through the questionnaire at the crowded tourist spots such as Laboni Sea Beach, Sughanda Sea Beach, Inani Sea Beach, and the Himchari mountain areas of Cox Bazar, which are the most crowded places in this destination. We used nonprobability sampling, particularly the convenience sampling method for data collection. In this sampling, researchers limit the sample based on their judgments, knowledge, and perceptions.

Data are collected by the five members of the well-trained research team, including researchers and members who are Bachelor of Business Administration students at Noakhali Science and Technology University, Bangladesh. The students are hired for data collection purposes. Questionnaires are distributed to tourist sites during tourist crowding. The research team asked the participants whether they felt crowded on the sites and were interested in participating in the survey. If tourists acclaimed a positive attitude about the willingness to participate, the team briefly described the questionnaires and their purpose. Moreover, tourists aged below 18 are not included as samples, and international tourists are also excluded. Around 500 questionnaires were distributed among the crowded tourists, but only 308 questionnaires were valid from the returned questionnaire, and a few were eliminated for incomplete filling up and a lot of missing values. According to J. Hair (2009), a 10:1 sample-to-item ratio is needed for multivariate data analysis, and for structural equation modeling, a minimum sample size of 100 is required (Hox and Maas 2001; Vinkóczi, Heimné Rácz, and Koltai 2024). Therefore, the sample size of the study 308 ($308 > 27 \times 10$) is sufficient for the analysis using SEM. Moreover, at least 150 valid samples are required for applying structural equation modeling (J. F. Hair et al. 2007). Hence, the researchers decided that the collected sample was enough.

3.3 | Instruments/Constructs

The scales and measures used in this research were adapted from existing studies and are valid and reliable. All the items here are measured as a 5-point Likert scale from *strongly disagree* (1) to *strongly agree* (5). For the study, we adopted TPC as a three-dimensional construct of neutral, personal, and social crowding. For the final questionnaire, 27 measurement items, including TPC, DA, and tourist loyalty (TL), were adapted from the existing valid and proven literature. Therefore, four items of neutral crowding are adapted from L. Li et al. (2017), four items of personal crowding are taken from Stokols (1972) and later adapted by Manning (2022) and L. Li et al. (2017), and four items of social crowding are adopted from Stokols (1972) and recently adapted by L. Li et al. (2017). Moreover, six items of DA are taken from the existing literature (Hu and Ritchie 1993; Yin et al. 2020), and nine items of tourist loyalty constructs (Mansour and Ariffin 2017; Nowacki 2009; Žabkar, Brenčič, and Dmitrović 2010) are used as the measurement items.

3.4 | Data Analysis Methods

IBM SPSS Statistics 27 version and SmartPLS 4 version were applied here to analyze the data. SPSS was used for analyzing

demographic data. To find the relationship between variables and to examine the data reliability and validity, we use partial least-squares structural equation modeling (PLS-SEM). Structural equation models are often separated into CB-SEM and PLS-SEM. CB-SEM evaluates how well a researcher's maximum likelihood research model assumes sample covariance. CB-SEM assumes that data distribution is normal and requires many samples (Sarstedt, Ringle, and Hair 2021). Complex mediation and moderation models are better assessed by PLS-SEM than regression analysis using SPSS. Another reason for applying PLS-SEM is its lower sample size and data normality requirements than Amos (J. F. Hair et al. 2016). In addition, PLS-SEM is also effective in small data sets. Finally, as a nonparametric statistical tool, PLS-SEM does not need data to be normally distributed (J. F. Hair et al. 2019). In this research, there is no other data normality issue.

3.5 | Common Method Bias (CMV)

First, the study applied a forward–backward translation method by which the English version of the questionnaire is translated into the native language of the respondents and the questionnaire, then back into English by the expert opinion according to Brislin (1970). Second, we maintained respondent anonymity and confidentiality to avoid social desirability bias, as prior research showed that people are more likely to give honest answers when their names are concealed. In this study, researchers examined a common method bias by applying variance inflation factors (VIFs) and collinearity tests (Kock 2015). According to J. F. Hair et al. (2019), VIFs should be less than 5 as an expost remedy for avoiding the common method bias. The collinearity test result showed in Table 1 that the VIF score for all predictors was less than the cutoff value (5), and there is no issue of multicollinearity in this study. Expost rectification for the common method bias is another common use of Harman's single-factor test (Podsakoff et al. 2003). According to Harman's single-factor test results, the first component explained just 18.039% showed in Appendix 1, which is less than 50% of the overall variance (Aslam et al. 2021). Therefore, we can move forward with empirical analysis without concerns regarding the common method bias.

4 | Results, Findings, and Analysis

4.1 | Sociodemographic Information

The respondents are more male (78.9%) than female (21.1%), of which half of the respondents (51.3%) are 25–34 years old in this study. Most respondents (54.7%) are married, whereas 42.3% are single. Moreover, the maximum number of respondents who have undergraduate and professional courses/certificate courses is 28. 9% and 37.8%, respectively. In addition, most respondents have a business (44.7%) and salary income (31.7%) as a source of income. Concerning income, 26.4% of respondents have an income of 26,000–35,000 Taka, 20.1% of respondents have an income of 36,000–45,000 Taka, and 14.2% have an income level of 10,000–25,000 Taka. Moreover, most of the respondents organized their tours as a group, which is 60.6% of the total, and 14.1% organized tours themselves.

4.2 | Empirical Findings

The researchers suggested the model was tested here by applying a two-step approach. First, the measurement model was evaluated to test the validity and reliability of the instruments by the propositions of J. F. Hair et al. (2019). Second, we evaluated the structural model to test the proposed hypothesis of this study. The loadings, average extracted variance, and composite reliability (CR) were used to evaluate the measurement model. Factor loadings, path coefficients, and the appropriate significance level for hypothesis testing are calculated using the PLS approaches and the bootstrapping procedure. Five thousand subsamples were used in the bootstrapping procedure in the study (J. F. Hair et al. 2019).

4.2.1 | Measurement Model Assessment

Before conducting the hypothesis tests, the measurement model was evaluated. In this stage, convergent validity (CV) was calculated. The average variance extracted (AVE) of each construct and the standardized factor loading of each item on the respective construct must be more than 0.5 for sufficient CV (Fornell and Larcker 1981). J. F. Hair et al. (2016) stated that CR and AVE values should be more than 0.70 and 0.50.

The values for CR are exhibited in Table 1, which are more than 0.70. As per the findings reported in Table 1, all of the factor loadings meet the threshold of 0.50. In this study, factor analysis was performed, and items with a factor loading less than 0.5 were deleted. Items NC1 and NC4 of neutral crowding; item PC3 of personal crowding; item SC4 of social crowding; items DA2 and DA3 of DA as well as items TL1 and TL9 of tourist loyalty were eliminated because the loading value is less than 0.50. In this study, the results showed AVE values of above 0.5 except personal crowding (0.469). However, in this specific case, CR is 0.723. AVE is still acceptable and has sufficient CV because 0.4 is acceptable when AVE is less than 0.5, but CR is more than 0.6 (Fornell and Larcker 1981), as also referred by Fawehinmi et al. (2020).

This study assessed the discriminant validity using the heterotrait–monotrait (HTMT) criterion (Henseler, Ringle, and Sarstedt 2015). The values of HTMT $\leq$ 0.85 outline the stricter criterion, while HTMT values $\leq$ 0.90 portray the lenient criterion. According to Ringle et al. (2020), as per the criterion of all variables, values of HTMT must be lower than 0.90. The HTMT values presented in Table 2 of this analysis fell short of the stricter threshold of 0.90, which fixes the discriminant validity for all variables. Finally, the measurement model was satisfactory by assessing convergent and discriminant validity.

Moreover, the study also assessed discriminant validity by the Fornell–Larcker criterion (FLC). The square root of AVE for a construct must be larger than the correlation between the constructs and any other constructs to meet the Fornell–Larcker criterion (Fornell and Larcker 1981). Therefore, the value of FLC fulfilled the condition of discriminant validity for the constructs, as shown in Table 2.

TABLE 1 | Reliability, convergent validity, and variance inflation factor (VIF).

Construct	Items	Loading	Composite reliability	Average variance extracted	VIF
Neutral crowding			0.867	0.764	
Perception of the crowding of the resting areas	NC2	0.866			1.389
Perception of the crowding of the toilets	NC3	0.886			1.389
Personal crowding			0.723	0.469	
I do not like it because public order was disturbed by too many tourists	PC1	0.581			1.075
I was upset because too many tourists polluted the environment by leaving litter	PC2	0.797			1.076
Too many tourists were an impediment for me to use the facilities	PC4	0.659			1.118
Social crowding			0.774	0.547	
Surrounded by too many strangers destroyed my mood to enjoy the scenery	SCI	0.500			1.119
I was nervous about being surrounded by too many strangers	SC2	0.746			1.438
I was disturbed by contact with too many people	SC3	0.914			1.276
Destination attractiveness			0.831	0.554	
The natural beauty of the tour area attracts me	DA1	0.742			1.348
The delicious and rich food of the tour area makes me long for it	DA4	0.626			1.283
The special shopping products of the tour area attract me	DA5	0.767			1.653
The local customs of the tour area appeal to me	DA6	0.829			1.756
Tourist loyalty			0.868	0.490	
I recommended Cox's Bazar to my friends and family	TL2	0.552			1.308
Cox's Bazar was my first choice for my vacations, and I visited it before	TL3	0.688			1.855
I prefer Cox's Bazar for my vacations	TL4	0.687			2.100
I talk about Cox's Bazar in my social circles	TL5	0.819			2.471
I talk about Cox's Bazar in my social media	TL6	0.831			2.254
I will recommend Cox's Bazar to my friends and family	TL7	0.698			1.521
I will visit Cox's Bazar again for my next vacation	TL8	0.579			1.299

Source: Author's estimation using SmartPLS 4.

4.2.2 | Structural Model Assessment

Path coefficients, *t*-values, and standard errors were applied to determine the model significance in this study. The researchers here followed the bootstrapping procedure for testing the hypothesis and finding the direct and indirect effects. The path coefficient was estimated while evaluating the structural model. Figure 2 shows the outcomes of both

TABLE 2 | Discriminant validity.

	Destination attractiveness	Neutral crowding	Personal crowding	Social crowding	Tourist Loyalty
Heterotrait–monotrait criterion					
Destination attractiveness	—				
Neutral crowding	**0.426**	—			
Personal crowding	0.515	**0.346**	—		
Social crowding	0.217	0.252	**0.895**	—	
Tourist loyalty	0.479	0.355	0.179	**0.234**	—
Discriminant validity (Fornell—Larcker criterion)					
Destination attractiveness	**0.744**				
Neutral crowding	−0.323	**0.874**			
Personal crowding	0.309	0.082	**0.685**		
Social crowding	0.126	0.174	0.429	**0.740**	
Tourist loyalty	0.412	−0.297	−0.025	−0.195	**0.700**

Note: Bold indicates that the HTMT value is below ≤ 0.90, so that each construct is statistically distinct from the others, ensuring that the measurement model is valid for both convergent and discriminant validity.
Source: Author's estimation using SmartPLS 4.

the inner model path coefficients and the outer loadings. Table 3 presents the results of the path coefficients and the direct effect. First, hypotheses H1a and H1b are significant. Here, $\beta = -0.358$ and 0.316, and $p < 0.05$ for H1a and H1b. H1a has significant and negative effects between variables, but H1b has positive effects. Hence, the result indicates that neutral crowding significantly and negatively affects DA, but personal crowding has significant positive effects on DA. Moreover, hypothesis H1c is unsupported (path coefficient, $\beta = 0.053$ and $p > 0.05$). Therefore, social crowding has no significant effect on DA. Next, the result depicted in Table 3 shows that hypotheses H2a and H2b are unsupported by this study. Therefore, neutral and personal crowding has no significant effect on tourist loyalty ($\beta = -0.124$ and -0.056 and $p > 0.05$ for H2a and H2b). Hence, neutral and personal crowding has no significant direct effect on tourist loyalty. Moreover, hypothesis H2c is supported. Therefore, social crowding has a significant and direct negative effect on tourist loyalty ($\beta = -0.202$ and $p < 0.05$). The result in Table 3 also showed that the hypothesis H3 is supported, indicating DA has a significant positive effect on tourist loyalty ($\beta = 0$ 0.415 and $p < 0.05$).

4.2.2.1 | **Mediation Analysis.** Table 4 shows the results of the indirect effects described in hypothesis H4. The path analysis result supports the indirect effect of neutral and personal crowding through the DA ($\beta = -0.149$ and 0.131). As $p < 0.05$ for both hypotheses H4a and H4b, these two hypotheses are supported here. We can infer here that DA mediates the relationship between neutral crowding and tourist loyalty, as well as personal crowding and tourist loyalty. On the other hand, H4c is unsupported ($\beta = 0.022$ and $p > 0.05$). Hence, DA does not mediate between social crowding and tourist loyalty. Therefore, neutral and personal crowding indirectly relate to tourist loyalty.

4.2.2.2 | **Predictive Relevance and Effect Size.** The study uses R^2 (coefficient of determination), f^2 (effect size), and Q^2 predictive relevance to evaluate the model fitness shown in Table 5. Therefore, for the value of R^2, Cohen (1988) explained that the R^2 value between 0.02 and 0.12 was treated as weak, from 0.13 to 0.25 was considered moderate, and 0.26 or more was deemed as high. For endogenous variables, Chin (1998) advised that the R^2 values are as low as 0.19, as high as 0.33, and as low as 0.26 significant. In this study, Table 5 shows the adjusted R^2 values, which were 0.212 and 0.238, for DA and tourist loyalty, respectively, indicating that predictors (neutral, personal, and social crowding) explained 0.212 and 0.238 of the variance of the response variable (DA and tourist loyalty). The result showed that there is a moderate level of predictive accuracy in this study following Cohen (1988).

As per the guidelines, the value of Q^2 could be greater than 0.35 (high relevance), between 0.15 and 0.35 (medium relevance), and less than 0.02 (small relevance) and the subsequent model predictive relevance (Cohen 1988). The result found that tourist loyalty ($Q^2 = 0.077$) and DA ($Q^2 = 0.188$) fall in the medium-to-small range of predictive relevance. Moreover, f^2 values illustrate whether exogenous variables significantly impact the endogenous variable. Cohen (1988) stated that f^2 is formed of various categories of smaller, medium, and higher effects and indicated that $f^2 = 0.02$ has smaller effects, $f^2 = 0.15$ has medium effects, whereas $f^2 = 0.35$ has higher effects. Following Cohen (1988), Table 5 shows that neutral crowding has a medium effect and personal crowding has a smaller effect on DA. In contrast, social crowding does not affect DA. Moreover, social crowding and DA have small and medium effects on tourist loyalty. In contrast, neutral and personal crowding does not affect tourist loyalty.

Moreover, the standard goodness of fit matrices are typically used in covariance-SEM and show less values in PLS-SEM

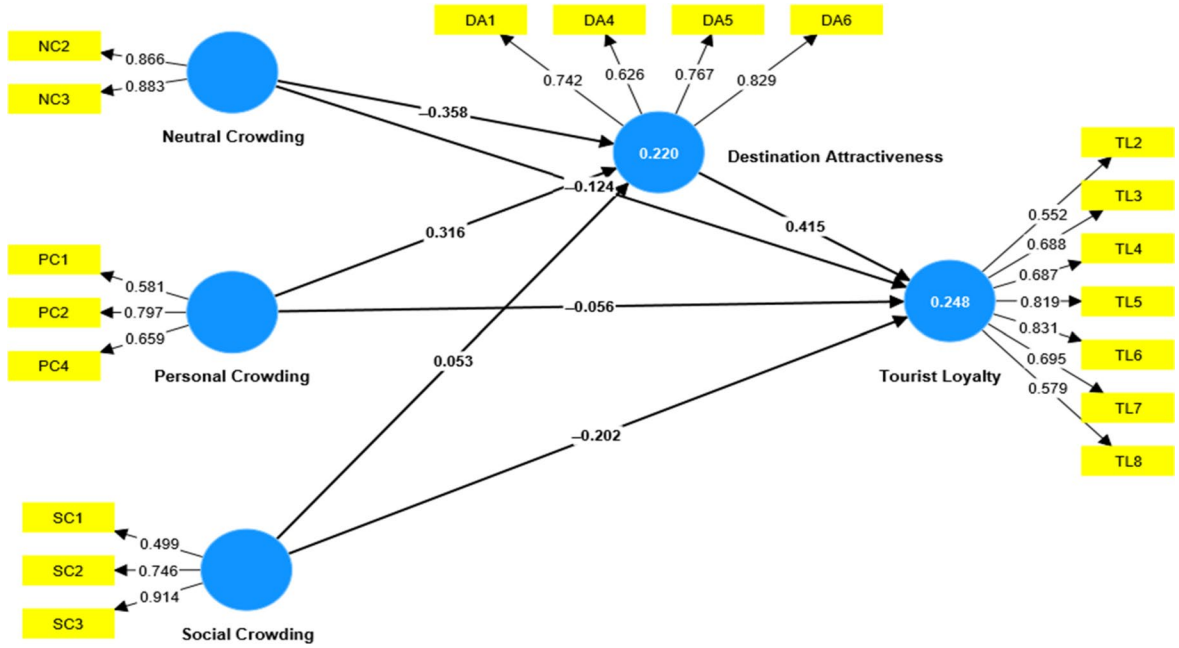

FIGURE 2 | Theoretical model with loadings (author's estimation).

TABLE 3 | Hypothesis testing/path coefficient estimates: Direct effect.

Direct effect	Sample (original)/β	Sample (mean)	Std. dev.	*t*-values	*p*-values	Result
Neutral crowding → Destination attractiveness	−0.358	−0.361	0.054	6.64	0.000*	Supported
Personal crowding → Destination attractiveness	0.316	0.324	0.059	5.326	0.000*	Supported
Social crowding → Destination attractiveness	0.053	0.051	0.076	0.702	0.483	Unsupported
Neutral crowding → Tourist loyalty	−0.124	−0.127	0.072	1.713	0.087	Unsupported
Personal crowding → Tourist loyalty	−0.056	−0.056	0.067	0.842	0.400	Unsupported
Social crowding → Tourist loyalty	−0.202	−0.205	0.062	3.247	0.001*	Supported
Destination attractiveness → Tourist loyalty	0.415	0.419	0.071	5.86	0.000*	Supported

Note: For two-tailed tests, *significant at 0.05 level, statistical significance is applied through $p < 0.05$ or *t*-value > 1.960.
Source: Author's estimation using SmartPLS 4.

TABLE 4 | Hypothesis testing/path coefficient estimates: Indirect effect.

Indirect effect	Sample (original)/β	Sample mean	Std. dev.	*t*-values	*p*-values	Result
Neutral crowding → Destination attractiveness → Tourist loyalty	−0.149	−0.15	0.031	4.772	0.000*	Supported
Personal crowding → Destination attractiveness → Tourist loyalty	0.131	0.135	0.032	4.047	0.000*	Supported
Social crowding → Destination attractiveness → Tourist loyalty	0.022	0.023	0.033	0.661	0.508	Unsupported

Note: For two-tailed tests, *significant at 0.05 level, statistical significance is applied through $p < 0.05$ or *t*-value > 1.960.
Source: Author's estimation using SmartPLS 4.

TABLE 5 | Coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2).

R^2 (coefficient of determination)			Q^2 (predictive relevance)
Endogenous variable	R^2	Adjusted R^2	Q^2
Destination attractiveness	0.22	0.212	0.188
Tourist loyalty	0.248	0.238	0.077
f^2 (effect size)			
	Destination attractiveness	Tourist loyalty	
Destination attractiveness	—	0.178	
Neutral crowding	0.16	0.017	
Personal crowding	0.104	0.003	
Social crowding	0.003	0.043	

Source: Author's estimation using SmartPLS 4.

(Khan et al. 2019). PLS-SEM continues to employ SRMR and NFI (J. Hair et al. 2014). J. Hair et al. (2014) recommended that the SRMR model values be 0.08 or 0.10 and the NFI values be 0.90 or 0.70. The study found that the model's SRMR value was 0.09, and the NFI value was 0.567, indicating that the model's accuracy was enough.

5 | Discussion and Conclusions

5.1 | Discussion

The crowding issue is vital for tourists to be more concerned about the destination experience, and the study will add new knowledge to the existing literature and validate the SOR model. First, neutral crowding and personal crowding significantly affect DA, but the nature of the relationship between these variables seems more complex and mixed. The result showed that neutral crowding negatively affects DA, but personal crowding affects it positively. This result supported both positive and negative sentiments, and results found in a study showed that people feel the excitement, fun, and friendliness resulting from people watching and socializing (Jacobsen 2000; Urry 1990), while some visitors feel discomfort and annoyed for personal space violations and reduce the feelings of uniqueness (Jacobsen 2000; Jacobsen, Iversen, and Hem 2019). Moreover, Yin, Cheng, and Ni (2024) recommended alleviating fatigue and negative emotions, including those of peers, to mitigate the negative impact of crowding. Some studies have concluded that visitors in specific contexts prefer crowding due to its social value. Others have emphasized the need to examine the environmental and contextual factors that contribute to crowding perceptions (Yin et al. 2020). Crowding experience can also encourage positive reactions, which increased the valuation of tourist spots that are mostly related to visitors' interest, confirming a "collective gaze" (Urry 1990) among the tourists who are engaging in group tours (D. Kim, Lee, and Sirgy 2016; Popp 2012). Therefore, group tours could be an influencing factor for a positive relationship between personal crowding and DA, where our sample has covered 60.6% of tourists participating in group tours. In addition, Yin et al. (2020) found that tourists who perceive physical or neutral crowding might intend to avoid the destination. Moreover, perceived crowding of tourists reduces the popularity of a destination and negatively affects the attractiveness and satisfaction of the destination (Jacobsen, Iversen, and Hem 2019).

Moreover, this study also found that social crowding was unrelated to DA. This may be due to the crowding assessment varying depending on the types of visitors, contexts, times, and territories (Navarro Jurado, Damian, and Fernández-Morales 2013). Previously, tourism researchers also found that the perceived crowding is very much culture-oriented, and age could influence factors (Absher and Lee 1981; Jin and Pearce 2011). For instance, people of Asia and Africa have a higher tolerance level for chaos and crowding than European and American people (D. Kim, Lee, and Sirgy 2016). Moreover, J. I. Yoon et al. (2021) also found that among Korean and Taiwanese tourists, there were less significant correlations between overcrowding and enjoyment. The relationship seems complex between the tourist adaptation of hotspots and overcrowded destinations and TPC. Crucial factors may be landscape, townscape, area, and available space. In the small settlements, visitor crowds are highly visible, but in large areas, visitors do not feel more discomfort. Therefore, the findings proposed a multidimensional construct, and their results are also different, such as neutral crowding and personal crowding affecting DA, but social crowding is unrelated to the destination image.

Second, this study found that neutral and personal crowding had no significant direct effect on tourist loyalty, but social crowding had a significant negative effect on tourist loyalty. The result is supported by the study that physical or neutral crowding had a negative effect on revisit intention (Yin et al. 2020). Overall, the crowding issue is an essential factor affecting negatively revisiting intention (Seetanah, Teeroovengadum, and Nunkoo 2020). One of the research results was also found relevant to our result that neutral and human or personal crowding indirectly negatively affects visitor satisfaction (D. Kim, Lee, and Sirgy 2016). Conversely, social crowding sometimes positively affects destination loyalty because of place love (Masroor and Shiva 2024). Therefore, tourist

satisfaction leads to destination revisit intentions and positive word-of-mouth (WOM) recommendations (S. Hossain et al. 2023). In this study, we also found that neutral and personal crowding could not directly influence tourist loyalty but can affect loyalty by fully mediating through DA. DA is not mediating between social crowding and tourist loyalty. This result is confirmed by several studies that crowding has been seen as a demonstration of tourism destination popularity and image (Petr 2009) and as a source of negative holidaymakers' responses (Jacobsen 2000).

Third, this study also examined that DA has a significant and positive effect on tourists' loyalty, supported by many studies and their empirical results that supported the positive relationship between DA and loyalty (Wang et al. 2020). It was also found that the probability of visiting tourist spots will increase and be revisited due to DA (C.-F. Lee, Huang, and Yeh 2010). The earlier findings of the research indicate that there is a significant positive relationship between DA and travel and revisit intention (Ma et al. 2018). Furthermore, positive WOM (including electric word of mouth [e-WOM]) also boosts tourist destinations' positive images (Phillips et al. 2013), while negative e-WOM increases negative images usually resulting from active customers' dissatisfied experiences. Chi and Qu (2008) also confirmed that a positive destination image leads to increased tourist loyalty, consistent with the DA–tourist loyalty paradigm that conceptually frames the study. Therefore, tourist loyalty is significantly influenced by tourists' experiences and insights into DA.

5.2 | Theoretical Implications

This study makes a specific theoretical contribution to research focusing on DA and tourist loyalty while examining TPC as an antecedent. After investigating the literature and empirical analysis, the researchers identified that this study will contribute to the current literature on tourism and hospitality management by examining how neutral, social, and personal crowding affect DA and tourist loyalty. Also, this study contributed to the literature by examining (i) the effects of DA on the loyalty and the mediating relationship between perceived crowding and tourist loyalty. (ii) In this study, tourist loyalty is demonstrated from a customer perspective, which is the comprehensive definition, adding a new dimension or filling the methodological gap of defining tourist loyalty to the existing literature which was ignored in the previous study mentioned in the review research by Dogru-Dastan (2024). (iii) Many empirical analyses have been conducted to investigate the effects of TPC on the quality of the tourist experience and tourist satisfaction. However, few studies have been on DA. However, their analysis and evaluation of crowding perceptions have many limitations (L. B. Shelby and Vaske 2007). Our study is focused on improving the existing literature presenting a multidimensional TPC based on Flavián, Ibáñez-Sánchez, and Orús (2019). Nowadays, crowding is an essential environmental factor determining a destination's popularity or image (Petr 2009), but it creates a negative perception of the tourism business and environment (Pons, Mourali, and Giroux 2014). This study suggested a new result to the literature: TPC has both negative and positive impacts on DA; specifically, neutral crowding has negative effects, and personal crowding positively influences DA. (iv) Moreover, DA directly influences tourist loyalty. (v) The SOR model can effectively illustrate the tourist crowding issues in a multidimensional way as neutral, physical, and social, which have influenced the tourist DA which is a new antecedent of tourist loyalty. Therefore, the unique theoretical contribution is applying the SOR model in crowding research to the effects on tourist loyalty, such as attitude and behavioral loyalty, where DA plays a key role in the relationship. This study particularly contributes new knowledge to tourist destinations like Cox Bazar Sea beach areas where the tourist places are overcrowded. In addition, the model developed in this crowding research for tourist loyalty might be applied to another country, specifically in Asia or Africa, where a huge population may exert overtourism in a destination. Therefore, this study provides mixed perceptions of crowding in collectivistic and high-contract cultures also supported by the literature that collectivistic and high-contact cultures (Asian, Latin) are more tolerant to crowds than individualistic and low-contact cultures (Anglos culture) (Evans, Lepore, and Allen 2000; C. Wu and Luan 2007). Furthermore, the result also may be generalized to other countries or regions where the samples are representative of crowding research, and the destination is a hotspot for tourist sites.

5.3 | Managerial Implications

Research findings identified interesting outcomes from planning and management perspectives, as they revealed potential approaches and courses of action for outdoor recreation, tourism, and destination management. The findings will help service providers to develop appropriate crowding management strategies to gain competitive advantages. On the other hand, the government and other stakeholders can concentrate on crowding management and destination quality or image. Therefore, perceived crowding must be considered and managed throughout the entire service chain.

From a management standpoint, our findings provide interesting insights for controlling the visitor flow and crowding-related difficulties essential for enhancing services such as providing the relevant message at the right time and place. If staff and tourists were more informed, they could communicate better, preventing crowding-related problems like noise, waste management, and other environmental problems due to overcrowding. Moreover, the government and other stakeholders should jointly formulate environmental sustainability policies to protect nature and make the destination more attractive.

Furthermore, the findings and theoretical outcomes will help destination managers how effectively they could formulate and implement marketing strategies for managing the destination and crowding issues to ensure visitor satisfaction and loyalty. This study will help to prepare guidelines and specific codes of conduct for tourists and service providers to manage and promote crowded destinations. In addition, local governments can disseminate publicity materials including promoting local culture and history, public transportation, TV channels, public publicity columns, and other places to promote tourism destinations strategically and within their carrying capacity. This could give residents and prospective tourists a more comprehensive knowledge of the areas (Pai et al. 2023). Therefore, a cooperative network between the government, privately specialized agencies, local citizens, and stakeholders can help the region achieve its goal (S. Lee et al. 2024), particularly in crowded destination

management. Our study found that crowding perception, DA, and loyalty have a relationship more or less, so tourism business stakeholders should consider and develop an integrated action plan through community engagement and participation to address these issues in the interest of the tourism sectors.

Moreover, destination managers should manage the crowding issues carefully because diverse tourists have different levels of tolerance, limiting crowding in collectivistic cultures like that in Bangladesh and other Asian countries. Moreover, customer relationship management is essential to lessen the vulnerability of destination image due to some factors of overtourism. Furthermore, the service providers should address the crowding issues differently and carefully because tourists perceive crowding based on preference, expectation, and many other factors.

5.4 | Limitations and Future Research Directions

This research has some limitations which direct the suggestions for future research: (i) The study is based on the effects of the crowding perception on DA and tourist loyalty and overcrowded tourist attractions, so there is an avenue for future research on artificial tourism facilities like an artificial theme park, man-made ancient monuments and statues, ancient cities, etc., but not overcrowded. (ii) Further, it is expected that the findings identified in this study can be generalized by conducting a study targeting not only Bangladesh but also respondents of various nationalities or contexts. Second, (iii) there may be research on replication on different cultural backgrounds and country contexts to test and compare with our research findings. (iv) Our study did not consider the effects of age, gender, education, nationality, and other demographic variables on crowding perception and its effects. Hence, further research could be using these variables as independent moderators. (v) There could be an extension of the model by using other related variables such as perceived risk and experience quality, destination management strategy, environmental strategy, and satisfaction as mediators and moderators. (vi) Our study is based on cross-sectional survey, and the study could be a longitudinal analysis in the future. (vii) Our study mainly focused on empirical analysis with a quantitative method. Additionally, future studies may be focused on a mixed-method approach for in-depth analysis. (viii) Another methodological limitation is that the study focused on domestic tourism; in the future, the study should focus on targeting both domestic and international tourists.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix 1

Total Variance Explained

Total variance explained						
	Initial eigenvalues			Extraction sums of squared loadings		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.871	18.039	18.039	4.871	18.039	18.039
2	3.598	13.325	31.365			
3	2.226	8.245	39.610			
4	1.941	7.187	46.797			
5	1.436	5.317	52.114			
6	1.156	4.282	56.396			
7	1.027	3.805	60.201			
8	0.929	3.442	63.643			
9	0.877	3.249	66.892			
10	0.813	3.011	69.904			
11	0.805	2.983	72.886			
12	0.716	2.651	75.538			
13	0.679	2.514	78.052			
14	0.629	2.331	80.383			
15	0.602	2.228	82.612			
16	0.578	2.140	84.752			
17	0.537	1.987	86.739			
18	0.483	1.790	88.529			
19	0.448	1.659	90.188			
20	0.424	1.571	91.759			
21	0.401	1.487	93.245			
22	0.392	1.452	94.697			
23	0.353	1.308	96.005			
24	0.325	1.202	97.207			
25	0.291	1.079	98.285			
26	0.258	0.955	99.240			
27	0.205	0.760	100.000			

Note: Extraction method: Principal component analysis.