

Social Crowding, Territoriality and Consumer Behavior: Brand Value's Moderating Role

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Abstract. This study investigates the impact of social crowding in casual dining restaurants on consumers' perceived territoriality and behavior intentions. A survey of 462 consumers reveals that crowding negatively affects territorial perceptions and behaviors. However, these effects are mitigated for brands with higher equity. The results imply that enhancing brand value can help offset the adverse psychological and behavioral consequences of crowding. For practitioners, this highlights the need for holistic strategies encompassing store environment, service quality and brand building to manage the customer experience. The findings contribute to literature on services capes and consumer psychology by elucidating crowding's effects and identifying brand value as a key buffer.

Keywords: Social crowding, Territorial perceptions, Customer behaviors, Brand value, leisure Restaurant

1. Introduction

In the 'World Population Prospects' report, the United Nations estimates that the global population will surpass 8.5 billion by 2030, exceed 9.7 billion by 2050, and reach over 10.9 billion by 2100 (Dorling, 2021). Clearly, with the increasing population, crowding has become a norm in people's lives. Consumers tend to experience unpleasant emotions in crowded environments (Moon, 2021), and social crowding has a negative impact on consumer behavior (Cai, 2021). Crowded consumption environments are common in daily life. As people's consumption levels continue to rise, opportunities for dining out also increase. People's demands for dining are not limited to the quality of dishes but extend to the restaurant's ambiance and service (Zhong, 2020). Given the ubiquity of crowding, a vital question for marketing researchers and practitioners is: How and to what extent does crowding affect consumer behavior in casual dining restaurants? Therefore, for service enterprises, understanding how social crowding influences consumers' perceptions and behaviors becomes crucial.

Social crowding refers to the subjective feelings and objective states that arise when the number of people within a certain unit area result in limited social (crowd) activity space, failing to satisfy individual needs. It can be perceived as a negative emotional experience, essentially characterized by individuals feeling their personal space being invaded and perceiving threats from the environment (Pikkemaat, 2020). Desor (1972) empirically pointed out that crowding not only encompasses the physical dimension of unit space but also includes the social dimension of interactions between individuals. Researchers first explicitly proposed that social crowding refers to individuals receiving excessive stimuli from social sources. This definition not only emphasizes that, during crowding, people's judgments are influenced by the overall social stimuli, but it also underscores the social interactions between individuals in a social environment. Blut (2020) explicitly suggested that crowding should include two dimensions: perceived spatial crowding and perceived human flow crowding, and they proposed specific measurement methods. Micu (2022) found that in confined spaces, whether one feels invaded can impact consumer behavior. Therefore, based on the foundation of previous research (Maeng, 2013, O' Guinn, 2015), this study believes that social crowding refers to the experiential state where individuals feel constrained due to the high population density within a unit area, often accompanied by uncomfortable subjective feelings like anxiety and stress. Social crowding encompasses both the physical dimension of unit space and the social dimension, representing an individual's subjective experience in limited spaces, and is inherently a subjective perception. Some scholars have empirically demonstrated that social crowding can lower consumer interpretative levels, thereby reducing consumers' sense of control over their environment (Maeng, 2013). Simultaneously, when consumers shop in crowded environments, it can impact their satisfaction with products and services, subsequently shortening their shopping time (Eroglu, 2005) and leading to negative product evaluations (O' Guinn, 2015). In summary, research on how social crowding influences behavior through consumer psychology is urgently needed, and the existing gaps in research provide ample room for further exploration.

Everyone has a fundamental need for territory, as indicated by Moore (2020). For example, consumers express control over space by marking their territory with possessions, such as in the context of service scenes (Griffiths and Gilly, 2012). Even in public spaces, consumers desire privacy without disturbance, and the perceived territoriality depends on the degree of physical separation from others and the psychological desire for achieving the preferred level of privacy. However, existing research on territoriality primarily focuses on organizational behavior (Sassen, 2020). In the field of service marketing in China, research on customer territoriality has just begun and has not received sufficient attention (Wang, 2022). Existing studies suggest that customer territoriality can reflect customer identification with the business, enhancing their purchase inclination (Micu, 2022). Conversely, it may also lead to strong defensive or retaliatory behavior towards other customers or employees, significantly impacting business operations. Understanding customer territoriality is crucial for businesses, but literature from the marketing field indicates limited research on the reasons, mechanisms, and

consequences of customer territoriality (Casimir, 2021). Comprehensive and in-depth research on this topic is urgently needed. Therefore, this study considers perceived territoriality as a vital variable and conducts exploratory research on its antecedents and consequences.

When consumers find themselves in crowded environments, it can restrict their communication with others. In such situations, individuals may seek alternative factors to fulfill their sense of belonging, and brands can serve as substitutes for establishing social connections (Burns, 2012). Therefore, in crowded environments, consumers may establish a connection through territorial perception and brand, meaning that the emotional value consumers attach to brands in socially crowded situations may influence consumer behavior. Although brand value is widely recognized as a crucial factor in marketing, we understand that the impact of brand value may vary in different market environments and consumer groups. Hence, this study aims to explore the moderating effect of brand value in service environments on customer territorial perception and behavior. By doing so, it aims to provide more accurate market strategy recommendations for service businesses to achieve better brand performance and consumer engagement in diverse market conditions.

This study analyzed relevant literature and theoretical models, employing the S-O-R (Stimulus-Organism-Response) theory as the theoretical foundation and framework. Subsequently, the study established the conceptual model. Data analysis and hypothesis testing were conducted using SPSS 26.0 and AMOS 26.0, leading to relevant conclusions. The theoretical contribution of this study lies in the application of territorial perception within the S-O-R model, challenging the previous notion that only the emotional pathway influences customer consumption behavior. The study validates the significant role of territorial perception. The empirical conclusions drawn from this study have practical implications for service businesses. Social crowding is a controllable factor for enterprises, and this study can assist service businesses in practically altering elements of the service environment to enhance service quality and stimulate customer behavior, ultimately improving business performance. By understanding the moderating factors, service businesses can better utilize these factors to promote positive customer behavior.

2. Literature Review

2.1.SOR Theory

The precursor to the S-O-R model was the S(stimulus)-R(response) model proposed by psychologist Skinner in 1935. This model was among the first to suggest that the environment affects individual behavior. However, this traditional model advocated for a direct, passive, mechanical reaction of individuals to environmental stimuli, portraying it almost as a simple cause-and-effect relationship, overlooking the individual's subjective agency. Building on this, environmental psychologists like Mehrabian (1974) incorporated cognitive psychology while refining the S-R model, introducing the Stimulus-Organism-Response, or S-O-R model. This, to some extent, reflected the active cognitive processing of environmental stimuli during the individual-environment interaction, breaking away from the prior view that treated an individual's inner state as a 'black box'. Subsequently, Belk (1975) further emphasized the significance of the Organism as an intermediary variable in the S(stimulus)-R(response) relationship, acknowledging the influence of an individual's inherent physiological and psychological states on the final response. Hansen (2008) argue that both intrinsic assessments and external behavioral tendencies are equally important for customers. Therefore, in addition to emotions, this paper specifically examines the impact of cognitive evaluation (territorial perception) as an intrinsic factor contributing to customer avoidance behavior.

Since Donovan and other scholars (1982) first introduced the S-O-R model to the retail field, numerous studies have shown that environmental factors are treated by scholars as independent variables in the study of consumer purchasing behavior. Researchers have proven that environmental factors such as product appearance (Yoo, Park and MacInnis, 1998) and shelf display methods

(Kaltcheva, 2006) can serve as stimuli variables for organisms and responses (Turley and Milliman, 2000). In other words, they can cause changes in an individual's internal cognition and emotions, further influencing the final purchase decision and behavior. Beyond exploring the external environmental factors affecting individual responses, Chen and Yao (2018) further categorized individual responses into approach and avoidance behaviors. Consumers' actions can either be on the positive side, such as repeat purchases, the willingness to stay, or impulse buying, or on the negative side, like discontinuing use, desire to flee, or a decline in brand affinity (Lis and Fischer, 2020). In summary, environmental stimuli are indispensable variables in the study of consumer purchasing behavior. In this paper, social crowding, an environmental stimulus, will be treated as an independent variable, elaborating on its effect on consumer behavior.

Organism, as a crucial mechanism for exploring the connection between environmental stimuli and individual responses, will focus on territorial perception as an intermediary variable in this paper, shedding light on the internal influences in the response process when individuals perceive negative consumption behaviors due to social crowding. Simultaneously, as brand value influences consumer decision-making and behavior, it will be introduced as a moderating variable, investigating its modulating role throughout the process."

2.2.Social Crowding and Perceived Territoriality

Tombs and McColl-Kennedy (2003), based on the situational behavior theory, pointed out that the number of people in an environment affects consumers' emotional reactions, cognitive responses, and purchase intentions. Recent solo dining literature found that "spatial closeness" with others led solo diners to perceive high levels of crowding, which negatively impacted their overall dining experience (Her and Seo, 2018; Hwang, 2018). This finding aligns with previous literature addressing appropriate restaurant table space issues. Coskun's (2019) research indicates that crowding can lead to feelings of anxiety, anger, and boredom, and different situations or individuals may produce varying perceptions. In daily life, individuals often maintain a comfortable physical distance or interpersonal distance from others. However, crowded environments break this sense of comfortable distance, forcing individuals into close contact with others, infringing on their private space, leading to perceptions of territoriality. Under the representation of spatial constraints, physical and social environmental crowding makes individuals feel that their personal territories are being invaded (Worchel and Teddlie, 1976). Therefore, after considering territorial factors in a socially crowded environment, this study proposes the following hypothesis:

H1: Social crowding in casual restaurants has a negative impact on consumers' perceived territoriality.

2.3.Perceived Territoriality and Consumer Behavior

In marketing literature, perception is considered a key factor in establishing enduring consumer relationships. Consequently, there's a natural connection between perception and behavioral, reflecting the rational decision-making process of consumers. Numerous empirical studies have validated this relationship's existence. Cronin. Jr (2000) and colleagues, using six different service industries as contexts, verified the relationship among perceived value, satisfaction, and behavioral intention; Tuncer (2021) and others proposed two conceptual models to examine the pathways of perceived value's impact on satisfaction and behavioral intentions. Their research found that perceived value has a direct influence on behavioral intentions and also exerts an indirect effect through satisfaction. Sack (1983) proposed that perceived territoriality can be a significant determinant of space users' satisfaction and intention to reuse. Moon (2020) suggested that the perceived territoriality of dormitory residents would be crucial to enhance their satisfaction. Wu (2014), through empirical research, indicated that if coffee shop consumers share a table with others, they perceive a low rate of territorial ownership, leading them to perceive a higher level of crowding, thus negatively evaluating their service experience. McGinley. S. (2021) examined consumers' perceptions of restaurant setups during the Covid-19 pandemic,

revealing that partitions between tables were perceived more positively than mannequins at tables. Kukanja (2020) studied consumers' sense of seat occupancy in restaurants and found it impacted perceptions of service quality. Research by Kumar and Nayak, (2019), Moon (2020) Sack (1983) ,Wu (2014) and others suggest that higher levels of perceived territoriality typically produce positive outcomes for consumers, as perceived territoriality is positively associated with consumer satisfaction, service experience, and intentions to revisit and recommend. Taylor proposed in 1980 that there is a close covariate relationship between perceived territoriality and behavior. Based on the aforementioned studies, the following hypothesis is proposed:

H2: Perceived territoriality positively influences consumer behavior.

2.4.Social Crowding and Consumer Behavior

Existing research has found that crowded environments tend to induce negative emotions, which in turn have an adverse impact on marketing outcomes. For example, consumers who experience a high sense of crowding in high-traffic areas such as public transportation, parks, and retail stores have higher levels of emotional drain and lower satisfaction (Machlei, 2000; Mahudin, 2012; Rathnayae, 2015). At the same time, the crowding effect also triggers avoidance motivation in consumers. For instance, a significant negative correlation was identified between the sense of crowding experienced by tourists in parks and their willingness to pay for attraction tickets (O' Guinn, 2015). Some scholars, simulating shopping scenarios in a laboratory setting, came to similar conclusions: under crowded conditions, people perceive products as having lower value and their purchase intentions decline (Prahiawan, 2022). They also place a greater emphasis on risk avoidance (Puzakova, 2017). From this, it is inferred that social crowding may impact consumer behavior. Based on this, we propose the following hypothesis:

H3: Social crowding has a negative impact on consumer behavior.

2.5.The Moderating Role of Brand Valuer

Brand value influences consumers' decision-making and behavioral tendencies. A strong brand value is defined as a brand that is widely recognized and highly respected. In this study, brand value is defined from the consumer's perspective in terms of its level of admiration and respect. Compared to weak brand values, strong brand values possess a more likable and esteemed brand image. Schaefer (2016) and others found that brand value weakens the contagion effect of consumer misconduct. Huang (2017) discovered that high-equity brands (strong brand value) enhance consumer word-of-mouth and repatronage intentions. Ho-Dac (2013) and colleagues found that compared to weaker brands, the product sales of strong brands are not significantly influenced by online word-of-mouth. Other studies have found that when consumers have a strong brand identification with a store, the pressure of invasion amplifies the consumer's territorial response, making consumers feel violated. Fournier (2019) found that when individuals experience a lack of control and belongingness in their surroundings, they engage in compensatory behaviors, such as treating brands as communication entities, subsequently manifesting a stronger brand preference. Based on the above research, we propose the following hypothesis:

H4: Brand value will moderate the impact of social crowding on consumers' perceived territoriality;

Namely: A high equity brand/strong brand will weaken the influence of social crowding on consumers' perceived territoriality.

H5: Brand value will moderate the effect of social crowding on consumer behavior;

Namely: A high equity brand/strong brand will weaken the influence of social crowding on consumer behavior.

2.6.Mediation Effects

Richard focused his research on pharmaceutical websites, and based on the S.O.R. model, revealed the mechanism by which website environmental factors influence customer website behavior. The study indicates that website environmental factors significantly impact customer website attitudes,

exploratory behaviors, and website engagement, ultimately promoting their participation in purchasing decisions and buying intentions. Building upon the S.O.R. model, Chang and Chen constructed a research model to examine whether online environmental factors (website quality and website brand) influence customer purchasing intentions. They primarily highlighted the mediating role of customer cognitive responses (online trust and perceived risk) in the relationship between online environmental factors and customer behavioral intentions. Dedeoglu's (2015) research discovered that customer perception aids in enhancing customers' repurchase intentions, and perceived value is a crucial mediating mechanism in the way the environment affects behavior (Gallarza., 2016). Furthermore, numerous scholars have used perceptual factors such as perceived curiosity, hedonism, perceived satisfaction, telepresence, and perceived service quality as mediating variables to explore the influence of environmental factors on customer behavior. Based on the above research, we propose the following hypothesis:

H6: Perceived territoriality mediates the relationship between servicescape and customer behavioral.

From this, the conceptual framework for research is established (see figure-1).

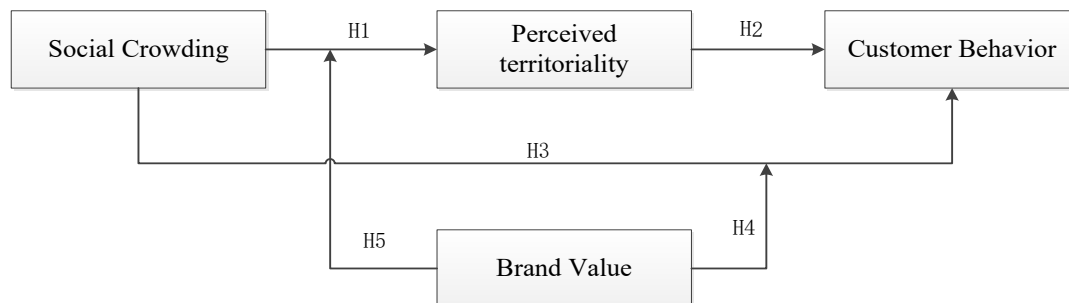


Fig.1: Conceptual framework

3. Methodology

3.1. Data Collection and Sampling

When selecting the research subject, strict criteria were applied for geographical and service industry considerations. As this study focuses on the impact of the service environment on customer territorial perception and behavior, it primarily targets one of the typical businesses in the leisure service industry, namely leisure restaurants. The scope of the research is defined as leisure dining establishments. In this study, leisure restaurants are defined as establishments where service is provided by waiting staff after seating. Leisure dining refers to dining establishments that offer tableside service. In comparison to upscale restaurants, they have longer operating hours and more flexible dining times. Examples include coffee shops, casual Chinese and Western restaurants, and tea houses. This type of restaurant involves customers dining or relaxing in specific areas, with higher customer flow, relatively large table density, and the potential to evoke territorial perception, providing a better understanding of the impact of the service environment on customer territorial perception and behavior.

The research primarily focuses on short-term and medium-term effects, considering the experiences of guests during their dining. Multiple leisure restaurants in Taiyuan, China, with average per expenditures ranging from 0 to 150 RMB, were selected as the research subjects. The study spans a continuous week, specifically during dinner hours, to minimize sample bias. Given the fluidity and uncertainty in the total volume of customers in leisure restaurants, convenience sampling, a form of non-probability sampling, was employed, as it is relatively simple to execute by distributing questionnaires to customers entering the restaurant during specific time periods. Sampling was conducted during specific time slots, particularly during peak dinner hours, where paper or online questionnaires were distributed to customers currently dining and online questionnaires were distributed

to customers who had finished dining.

Considering the convenience sampling method adopted in this study, a larger sample size increases the reliability of the results. Referring to the sample size for simple random sampling in probability sampling, which should be at least 385, this study distributed 462 questionnaires, multiplied by 1.2 for a margin of safety, resulting in 450 effective responses. The valid sample rate is 97.4%, meeting the requirements for statistical analysis.

3.2. Survey Instrument and Measures

The survey instrument consisted of five sections. The first part is the social crowding scale, adopting the mature scale by Yeajin Jang, Heejung Ro, and Tae-Hee Kim (2015), three main themes were identified and reliability is 0.824. The second part is the territorial perception measurement scale; this study utilizes the territorial perception scale by Soyeon Moon (2021) in the restaurant context, four main themes were identified and reliability is 0.708. The third part is the consumer behavior scale, which combines the approach-avoidance behavior scale from Sweeney & Wyber's (2002) research and the measurement of behavioral intentions by Jiun-Sheng Chris Lin and Haw-Yi Liang (2011), resulting in the development of the consumer behavior metric for this study, five main themes were identified and reliability is 0.837. The fourth part is the brand value scale. This research adopted Huan Xu and Hui Wan's (2018) brand value and brand strength scales, and contextualized them for the current study, four main themes were identified and reliability is 0.852. All research scales utilized a 5-point Likert scale (1=strongly disagree, 5=strongly agree). The fifth section of the survey encompasses demographic information of the respondents, including gender, age, educational level, occupation, monthly income, and per capita spending for the current consumption. Furthermore, this study conducted an item-total correlation analysis for all variable items. All CITC values are greater than 0.3, indicating no need to remove any measurement items (see as Table 1). The survey questionnaire was prepared by translating the original scales into Chinese and making some modifications in wording and format.

Table 1: The result of CITC

Variables	item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Social Crowding	This restaurant is a little too busy.	0.617	0.799
	There are a lot of customers in the restaurant.	0.599	0.801
	This restaurant seems very crowded and not convenient to walk.	0.725	0.746
	This restaurant looks difficult to move around in.	0.672	0.768
	I feel we had enough secured space both physically and psychologically surrounding us.	0.603	0.675
Perceived Territoriality	I feel we had adequate personal space when eating in this restaurant.	0.571	0.711
	I feel high personal ownership regarding my dining space when eating in this restaurant.	0.614	0.662
Customer Behavioral	I will say positive things about this restaurant.	0.606	0.814
	I will recommend this restaurant to other customers.	0.685	0.792

Brand Value	I will remain loyal to this restaurant.	0.696	0.788
	I will spend more money within this restaurant.	0.603	0.815
	I will stay longer in this restaurant.	0.609	0.813
	I feel positive about XYZ Restaurant	0.729	0.797
	I know XYZ Restaurant very well, and I trust it.	0.71	0.805
	If there is another brand as good as XYZ, I prefer to eat at XYZ Restaurant.	0.641	0.834
	XYZ Restaurant has a good reputation	0.694	0.812

4. Data Analysis

4.1. Sample Characteristics

Through the analysis of the basic personal information of the study participants, it can be observed that in terms of gender, the study group consists of 54.89% males and 45.11% females. This indicates a relatively balanced gender distribution in the study. In terms of age, there is a wide age range, covering individuals from under 18 to over 60. The largest age group is 26-30 years old, accounting for 17.56%, followed by 18-25 years old, at 23.33%. This suggests that the study encompasses participants from various age groups. Most of the participants have received a college education, making up 39.56% of the group. The next largest group has education levels of junior high school or below, comprising 20.67%. This may imply that a significant portion of the study participants have a higher level of education. The income distribution of the participants is relatively even, with the two largest groups being below 3000 yuan and 3000-5000 yuan, each accounting for 26.00%. See as table 2.

Table2: Demographic information of the sample

name	Options	Frequency□	Percentage (%)	Cumulative percentage (%)
Gender	Male	247	54.89	54.89
	Femake	203	45.11	100.00
Age	Under 18 years old	57	12.67	12.67
	18~25	105	23.33	36.00
	26~30	79	17.56	53.56
	31~40	67	14.89	68.44
	41~50	46	10.22	78.67
	51~60	55	12.22	90.89
	60 years old and above	41	9.11	100.00
Education level	junior high school and below	93	20.67	20.67
	high school	82	18.22	38.89
	college	178	39.56	78.44
	graduate school and above	97	21.56	100.00
Average monthly income	less than 3000 yuan	117	26.00	26.00
	3000-5000 yuan	117	26.00	52.00
	5000-10000yuan	110	24.44	76.44

Table2: Demographic information of the sample

name	Options	Frequency□	Percentage (%)	Cumulative percentage (%)
Occupation	10000 above	106	23.56	100.00
	Student	46	10.22	10.22
	Production Personnel	32	7.11	17.33
	Sales Personnel	29	6.44	23.78
	Marketing/Public Relations Personnel	25	5.56	29.33
	Customer Service Personnel	25	5.56	34.89
	Administrative/Logistics Personnel	25	5.56	40.44
	Human Resources	28	6.22	46.67
	Finance/Audit Personnel	19	4.22	50.89
	Clerical/Office Personnel	22	4.89	55.78
	Technical/Research Personnel	24	5.33	61.11
	Management Personnel	23	5.11	66.22
	Teacher	39	8.67	74.89
	Consultant/Advisor	27	6.00	80.89
	Professionals (such as accountants, lawyers, architects, healthcare professionals, journalists, etc.)	22	4.89	85.78
Average expenditure per person	Others	64	14.22	100.00
	0-50 yuan	75	16.67	16.67
	50-100 yuan,	232	51.56	68.23
	100-150 yuan	127	28.22	96.45
	over 150 yuan	16	3.55	100
	Total	450	100.0	100.0

4.2. Validity And Reliability of Measurements

This study employed the method of confirmatory factor analysis (CFA) to analyze the Average Variance Extracted (AVE) values and Composite Reliability (CR) values of various factors. Based on the results of the convergent validity analysis, it can be observed that the AVE values for social crowding, territorial perception, brand value, and purchase behavior are 0.553, 0.520, 0.593, and 0.511, respectively, all of which exceed the threshold level of 0.5. The CR values for social crowding, territorial perception, brand value, and purchase behavior are 0.831, 0.765, 0.853, and 0.839, respectively, all of which surpass the threshold level of 0.7. See as table 3.

Table 3: Reliability and validity

Item	coeff.	Std. Error	z	Std. Estimate	AVE	CR
SC1	1.000	-	-	0.681	0.553	0.831
SC2	0.774	0.065	11.987	0.647		
SC3	1.029	0.071	14.517	0.832		
SC4	1.062	0.075	14.202	0.799		
PT1	1.000	-	-	0.728	0.520	0.765
PT2	0.920	0.074	12.448	0.706		

Item	coeff.	Std. Error	z	Std. Estimate	AVE	CR
PT3	1.017	0.080	12.702	0.729		
CB1	1.000	-	-	0.683		
CB2	1.191	0.087	13.770	0.764	0.511	0.839
CB3	1.236	0.088	14.028	0.783		
CB4	1.016	0.083	12.262	0.664		
CB5	1.073	0.087	12.399	0.672		
BV1	1.000	-	-	0.813	0.593	0.853
BV2	1.016	0.058	17.604	0.798		
BV3	0.863	0.056	15.299	0.705		
BV4	0.945	0.057	16.723	0.761		

he discriminant validity analysis reveals that, under the square root condition, the Average Variance Extracted (AVE) value for social crowding is greater than the highest correlation coefficient (maximum value) with other research variables, which is -0.408. The AVE value for territorial perception, under the square root condition, exceeds the highest correlation coefficient with other research variables, which is 0.509. Similarly, the AVE value for purchase behavior, under the square root condition, is greater than the highest correlation coefficient with other research variables, which is 0.384. Lastly, the AVE value for brand value, under the square root condition, surpasses the highest correlation coefficient with other research variables, which is 0.509. This indicates that the research scale demonstrates a good level of construct validity.

The Cronbach's α coefficients for social crowding, perceptive territoriality, customer behavior, and brand value are 0.824, 0.708, 0.837, and 0.852, respectively. These values indicate that the measurement tool exhibits good internal consistency.

Through the exploratory factor analysis for the conceptual analysis of the scale, it is evident that the KMO test level for the scale is 0.880, and Bartlett's Sphericity Test is significant. When analyzing the factor loading levels, Factor 1 has loadings on measurement items CB that are all greater than 0.6, and Factor 2, Factor 3, and Factor 4 have loadings on BV, SC, and PT, respectively, all greater than 0.6. This indicates that the construct validity of the scale in this study is good. See as table 4.

Table 4: Validity Analysis

name	Factor load coefficient				Common degree
	Factor1	Factor2	Factor3	Factor4	
CB1	0.718	0.115	-0.101	0.182	0.571
CB2	0.809	0.150	-0.019	0.080	0.683
CB3	0.802	0.140	-0.095	0.092	0.681
CB4	0.705	0.120	-0.156	0.132	0.553
CB5	0.730	0.123	-0.178	-0.005	0.579
BV1	0.136	0.818	-0.040	0.232	0.743
BV2	0.189	0.792	-0.156	0.160	0.712
BV3	0.169	0.747	-0.122	0.156	0.627
BV4	0.129	0.803	-0.130	0.156	0.702
SC1	-0.120	-0.166	0.710	-0.245	0.606
SC2	-0.045	-0.084	0.751	-0.167	0.601
SC3	-0.155	-0.068	0.859	-0.041	0.768
SC4	-0.185	-0.121	0.804	-0.085	0.702

Table 4: Validity Analysis

name	Factor load coefficient				Common degree
	Factor1	Factor2	Factor3	Factor4	
PT1	0.157	0.182	-0.185	0.726	0.619
PT2	0.118	0.290	-0.203	0.667	0.584
PT3	0.106	0.177	-0.099	0.798	0.690
Eigenvalues (Initial)□	5.545	1.950	1.872	1.056	-
% of Variance (Initial)□	34.658%	12.188%	11.702%	6.597%	-
% of Cum. Variance (Initial)□	34.658%	46.846%	58.548%	65.145%	-
Eigenvalues (Rotated)□	3.066	2.787	2.671	1.899	-
% of Variance (Rotated)□	19.163%	17.417%	16.695%	11.870%	-
% of Cum. Variance (Rotated)□	19.163%	36.580%	53.275%	65.145%	-
KMO□		0.880			-
Bartlett's Test of Sphericity (Chi-Square)□		2917.569			-
df□		120			-
p value□		0.000			-

4.3. The Validation of The Structural Model (hypothesis testing)

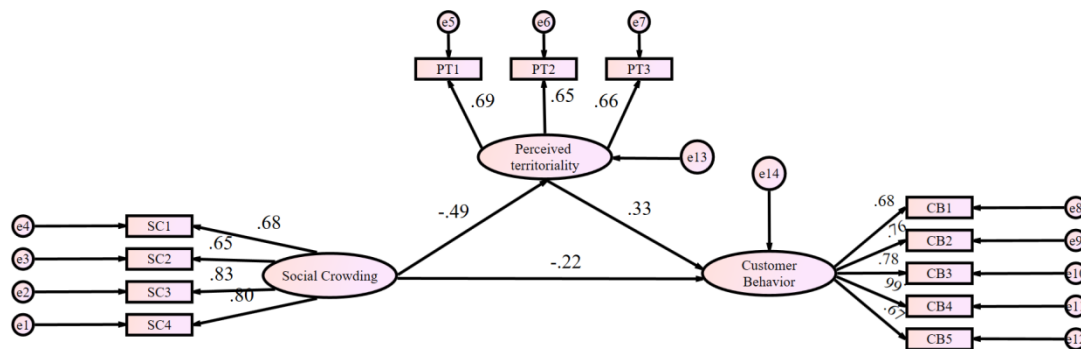


Fig.2: Measurement model

The analysis of the fit test results of the structural equation model indicates that the CMIN/DF (Chi-square value divided by degrees of freedom) is 2.349, falling within the range between 1 and 3. The RMR (Root Mean Residual) is less than 0.08, at 0.046, indicating that the residuals of the model constructed in this study are within an acceptable range. Additionally, most of the indicators such as GFI, AGFI, RMSEA, IFI, TLI, CFI, NFI, PNFI, and PCFI have reached the required levels, exceeding 0.85 or 0.9. The model exhibits a high level of fit in terms of both structure and data congruence. See as table 5.

Table 5: Fit Results

Exponential	Evaluation criteria	Fitting result	Result
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name				
Absolute fit index	CMIN/		119.776	/
	DF		51	/
	CMIN/DF	1~3	2.349	YES
Relative fit index	RMR	<0.08	0.046	YES
	GFI	>0.9 or 0.85	0.957	YES
	AGFI	>0.9 or 0.85	0.934	YES
	RMSEA	<0.08	0.055	YES
	IFI	>0.9 or 0.85	0.964	YES
	TLI	>0.9 or 0.85	0.953	YES
	CFI	>0.9 or 0.85	0.964	YES
	NFI	>0.9 or 0.85	0.939	YES
Simple fit	PNFI	0.5~0.9	0.726	YES
	PCFI	0.5~0.9	0.745	YES

The analysis of the path coefficients in the structural equation model reveals that social crowding has a significant negative effect on territorial perception ($B = -0.457$, $p < 0.001$). Territorial perception has a significant positive effect on consumption behavior ($B = 0.325$, $p < 0.001$), and social crowding has a significant negative effect on consumption behavior ($B = -0.201$, $p < 0.001$). The hypotheses H1, H2, and H3 formulated in this study are all statistically significant. See as table 6.

Table 6: Results of the Path Coefficients in the Structural Equation Model

Path relation			Non-standardized regression coefficient	Standardized regression coefficient	S.E.	C.R.	P	Label
PT	<---	SC	-0.457	-0.491	0.06	-7.565	***	Yes
CB	<---	PT	0.325	0.328	0.074	4.422	***	Yes
CB	<---	SC	-0.201	-0.218	0.06	-3.338	***	Yes
SC4	<---	SC	1	0.799				
SC3	<---	SC	0.971	0.834	0.057	17.065	***	/
SC2	<---	SC	0.728	0.647	0.054	13.408	***	/
SC1	<---	SC	0.939	0.679	0.066	14.141	***	/
PT1	<---	PT	1	0.69				/
PT2	<---	PT	0.934	0.653	0.094	9.938	***	/
PT3	<---	PT	0.953	0.661	0.095	9.991	***	/
CB1	<---	CB	1	0.684				/
CB2	<---	CB	1.189	0.763	0.087	13.724	***	/
CB3	<---	CB	1.236	0.784	0.088	14.001	***	/
CB4	<---	CB	1.014	0.663	0.083	12.227	***	/
CB5	<---	CB	1.07	0.672	0.087	12.36	***	/

4.4. Moderation Effect Testing

4.4.1. Analysis of the Moderating Effect of Brand Value on Social Crowding and perceptive territoriality

This study employs a hierarchical regression analysis to examine the moderating role of brand value in the relationship between social crowding and consumers' perceptions of territoriality. Prior to conducting the hierarchical regression analysis, the independent variables, social crowding, and the moderating variable, brand value, were centralized. An interaction term, "social crowding * brand value," was constructed for further analysis. From the model results, (see as table 7). it can be observed that there is a negative impact relationship between social crowding and consumer territorial perception ($B = -0.435^{***}$, $t = -9.464$). Social crowding negatively affects consumer territorial perception. Brand value plays a moderating role between social crowding and consumer territorial perception ($B = 0.123^{**}$, $t = 2.724$). Brand value moderates the relationship between social crowding and consumer territorial perception, and the direction of the moderating interaction term is opposite to the effect of social crowding on consumer territorial perception. This indicates that brand value has a negative moderating effect on the impact of social crowding on consumer behavior. In other words, high brand value/strong brands weaken the influence of social crowding on consumer territorial perception. Hypothesis H4 is supported.

Table 7: Analysis of the Moderating Effect of Brand Value on Social Crowding and perceptive territoriality

	Model 1	Model 2	Model 3
constant	2.977*** (82.733)	2.977*** (91.815)	3.007*** (88.269)
SC	-0.435*** (-9.464)	-0.289*** (-6.588)	-0.269*** (-6.105)
BV		0.363*** (10.235)	0.366*** (10.378)
SC *BV			0.123** (2.724)
N	450	450	450
R ²	0.167	0.325	0.336
ΔR ²	0.165	0.322	0.331
F □	F (1,448)=89.562,p=0.000	F (2,447)=107.527,p=0.000	F (3,446)=75.187,p=0.000
△R ²	0.167	0.158	0.011
△F □	F (1,448)=89.562,p=0.000	F (1,447)=104.750,p=0.000	F (1,446)=7.418,p=0.007

DV: PT

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

The analysis of simple slope results reveals that under conditions of high brand value, the negative effect of social crowding on consumer territorial perception is -0.150. Under conditions of low brand value, the negative effect of social crowding on consumer territorial perception is -0.388. This indicates that in a high brand value environment, the negative effect of social crowding on consumer territorial perception is significantly attenuated, confirming the existence of the moderating effect of brand value.

4.4.2. Analysis of the Moderating Effect of Brand Value on Social Crowding and Consumer Behavior

This study employs a hierarchical regression analysis to verify the moderating role of brand value in the relationship between social crowding and consumer behavior. Prior to conducting the hierarchical regression analysis, the independent variables, social crowding, and the moderating variable, brand value, were centralized. An interaction term, "social crowding * brand value," was constructed for further analysis. From the model results, (see as table 8). it can be observed that there is a negative

impact relationship between social crowding and consumer behavior ($B = -0.368^{***}$, $t = -7.427$). Social crowding negatively affects consumer behavior. Brand value plays a moderating role between social crowding and consumer behavior ($B = 0.103^*$, $t = 2.005$). Brand value moderates the relationship between social crowding and consumer behavior, and the direction of the moderating interaction term is opposite to the effect of social crowding on consumer behavior. This indicates that brand value has a negative moderating effect on the impact of social crowding on consumer behavior. In other words, high brand value/strong brands weaken the influence of social crowding on consumer behavior. Hypothesis H5 is supported.

Table 8: Analysis of the Moderating Effect of Brand Value on Social Crowding and Consumer Behavior

	Model 1	Model 2	Model 3
constant	2.569*** (66.312)	2.569*** (69.649)	2.594*** (66.691)
SC	-0.368*** (-7.427)	-0.256*** (-5.132)	-0.239*** (-4.755)
BV		0.277*** (6.872)	0.280*** (6.947)
SC *BV			0.103* (2.005)
N	450	450	450
R ²	0.110	0.195	0.202
Ad R ²	0.108	0.191	0.197
F □	F (1,448)=55.162,p=0.000	F (2,447)=54.037,p=0.000	F (3,446)=37.609,p=0.000
△R ²	0.110	0.085	0.007
△F □	F (1,448)=55.162,p=0.000	F (1,447)=47.220,p=0.000	F (1,446)=4.022,p=0.046

DV: CB

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

The analysis of simple slope results reveals that under conditions of high brand value, the negative effect of social crowding on consumer purchasing behavior is -0.139. Under conditions of low brand value, the negative effect of social crowding on consumer purchasing behavior is -0.340. This indicates that in a high brand value environment, the negative effect of social crowding on consumer purchasing behavior is significantly attenuated, confirming the existence of the moderating effect of brand value.

4.5. Mediation Effect

The Bootstrap method is currently a popular technique for testing mediating effects. "Bootstrap" is a resampling technique with replacement, where the original sample is treated as the population, and a "sampling with replacement" process is iteratively performed on this population (usually 5000 times or more), resulting in a larger sample size. By examining the mediating path of "Service Environment - Territorial Perception - Customer Behavior," it was found that the 95% confidence interval for the Bootstrap of this mediation effect, under the bias-corrected percentile test, is (-0.235, -0.089), which does not include 0. Therefore, the mediation effect is partial, with an effect ratio of 42.48%. Hypothesis H6 is supported. See as table 9.

Table 9: Mediation Effect Testing

Path relation	Point estimate	P	Bias-corrected percentile
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			Lower	Upper
indirect	-0.161	<0.01	-0.235	-0.089
direct	-0.218	<0.01	-0.318	-0.072
Total effect	-0.379	<0.01	-0.376	-0.597

Table 10. shows the overall decision regarding all the hypotheses.

Table 10: Hypothesis Test Results

Hypothesis	Decision
H1: Social crowding in casual restaurants has a negative impact on consumers' perceived territoriality.	Be accepted
H2: Perceived territoriality positively influences consumer behavior.	Be accepted
H3: Social crowding has a negative impact on consumer behavior.	Be accepted
H4: Brand value will moderate the impact of social crowding on consumers' perceived territoriality.	Be accepted
H5: Brand value will moderate the effect of social crowding on consumer behavior.	Be accepted
H6: Perceived territoriality mediates the relationship between servicescape and customer behavioral.	Be accepted

5. Discussion

This study confirms the negative impact of social crowding on customers' perceptions of territoriality. This indicates that an environment that is not overly crowded, allowing customers to move freely within the restaurant space, creates a sense of comfort, where personal space is not invaded, and customers have their privacy and belonging needs fulfilled (Muniandy, 2015).

The research also verifies the negative influence of social crowding on consumer behavior. This suggests that external physical space factors, such as appropriate spatial distance and crowd size, can directly and positively influence customers' willingness to consume. This further provides evidence for previous studies emphasizing the significant connection between environmental cues and behavioral intentions (Tang, 2020).

The study establishes a positive impact of customers' perceptions of territoriality on behavior. This implies that when customers perceive sufficient safe and personal space, both physically and psychologically, and have control over their dining space, they experience higher levels of territoriality (Peck, 2023). This positive territorial perception results in customers actively recommending the restaurant to friends, as well as being willing to spend more money and time at the establishment. Thus, a close relationship exists between territorial perception and customer behavior.

Furthermore, the study confirms that brand value moderates the impact of social crowding on territorial perception and customer behavior. This indicates that when customers have a strong understanding of and trust in the restaurant they are dining at, perceiving it as having a good reputation and feeling a strong sense of identification with it, even in a socially crowded service environment, customers do not feel their territorial boundaries are violated (Bertoldi, 2015). Additionally, brand value has a mitigating effect on the impact of social crowding on customer behavior (Tekin, 2016).

6. Conclusion

This study enhances theoretical understanding of how social crowding influences consumers' territorial cognition and intentions. The results validated crowding's negative effects, consumers' territoriality perceptions as an intermediary mechanism, and brand equity's moderating role. For managers, the findings imply that integrated strategies addressing store layout, employee training, and brand building are needed to contend with crowding. While this study focused on casual dining, future research can assess boundary conditions across utilitarian versus hedonic servicescapes. Investigating individual traits that exacerbate or mitigate sensitivity to crowding also offers avenues for enriching knowledge

on this important research domain.

6.1. Theoretical Implications

This paper, based on the SOR model framework, makes a significant theoretical contribution to psychology. Specifically, this study innovatively applies the environmental psychology model of stimulus-organism-response (SOR) and the related research on approach and avoidance motivations to the marketing field's study of crowding. It categorizes the consumer behaviors triggered by social and spatial crowding into approach-type responses and avoidance-type responses. According to the SOR model, environmental stimuli like crowding have a significant impact on individual psychology and behavior. However, what factors modulate such influences? Current environmental psychology research has not systematically focused on and explored this question from the perspective of social crowding as an environmental stimulus. By empirically analyzing situational factors, this paper elucidates, to some extent, the reasons for the multiple effects of crowding on consumers, offering a valuable supplement to current environmental psychology research.

6.2. Managerial Implications

In modern business models, the negative impact of crowding seems to be a significant reason for the loss of repeat consumers and the continuity of marketing. The perception of crowding varies not only with individual characteristics but also with the situation. Thus, the adverse effects brought about by social crowding present opportunities for service companies to develop marketing strategies (Blut and Iyer, 2020). The effects of crowding stimuli on consumer emotions and behaviors vary by context, providing essential insights and recommendations for service enterprises and public policy makers.

Research has found that social crowding can impact territorial perception and behavior. Therefore, service business managers need to understand the different modes of operation of crowding, influencing consumers' perceptions of crowding by altering their stay or store entry time. In fact, compared to the uncertainty brought about by social crowding, spatial crowding can be better managed and controlled. For example, restaurants can reduce consumers' sense of constraint by adjusting the layout and design within the store, providing them with more space (Machleit, 1994). Or provide more indicative information in the store, offer guidance services, to address the constraints and anxieties brought about by spatial or social crowding.

Beyond considering the adverse effects of crowding itself, businesses must also balance other factors such as service attitude, product quality, and business philosophy to achieve content-specific and strategic marketing results. Managers and employees of service venues such as dining and entertainment should remind consumers to consume rationally while considering profits (e.g., reminding diners about the number of diners and consumption amount). On the other hand, crowding research can also offer insights to public policy makers. The crowding in public consumption environments requires the rational allocation of public resources. For instance, specific food courts could be expanded to reduce consumers' sense of crowding. Furthermore, given that spatial crowding can reduce impulse buying and enhance consumers' self-behavior (Xu and Albarracín, 2016), financial services or investment decision venues might consider adjusting spatial layouts to aid decision-makers in making rational choices.

6.3. Limitations And Future Research

The study did not take into account whether the consumption environment was hedonic or utilitarian. Past research by scholars has shown that there are significant differences in the impact of the two types of environments on consumer behavior (Eroglu, 2005; Machleit, 1994; Pons, 2006). Consumers with utilitarian motives perceive a higher degree of crowding in highly crowded environments (Eroglu and Machleit, 1990). Therefore, future research could further distinguish the type of environment in which social crowding occurs (hedonic vs. utilitarian), and further explore the impact of the type of social crowding on consumer behavior, to expand the universality of the research results in real life.

Since the impact of social crowding on consumer behavior is not entirely negative, social crowding can increase consumers' positive emotions, promote word-of-mouth dissemination, and enhance the willingness to help. However, current theoretical explorations of the positive side of social crowding are not in-depth, and there is little research focusing on its positive impacts. Future research could attempt to fill this gap in the field.

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