

The Impact of Social Anxiety on The Catering Industry: A Demand Chain Transformation from Eating Alone to Silent Ordering

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Abstract. The continuous rise of social anxiety disorder globally, especially among urban youth, has prompted a re-examination of traditional social scenarios. As a high-frequency social scene, the catering industry significantly increases the psychological pressure of social anxiety sufferers by amplifying the risks of observation and evaluation, thereby driving consumers to generate new demands for dining environments and service models. This study focuses on the impact of social anxiety on consumers' psychological expectations and behavioral patterns when dining out, revealing its psychological mechanism of "increased evaluation threat and decreased sense of control", which drives demand to evolve from individual consumption to quiet dining and then to zero contact services. Catering enterprises have successfully constructed a "selectable low interaction/self-service" model through systematic changes in space reconfiguration (such as partitioned seating), process redesign (contactless ordering), and technology environment integration (Artificial Intelligence service system), reducing customer anxiety and labor costs, achieving dual optimization of operational efficiency and experience. This study not only confirms that psychological stress can be a core driving force for industry innovation but also provides differentiated competitive solutions for the catering industry and practical paradigms for mental health friendly business design.

Keywords: Social anxiety; solo dining/eating alone; silent ordering; restaurant industry transformation.

1. Introduction

In recent years, the prevalence of social anxiety disorder has continued to rise globally. According to data from the World Health Organization, the lifetime prevalence of social anxiety in high-income countries has reached 7% -13%. In China, relevant reports indicate that the proportion of urban youth aged 18-35 who self-report "social anxiety" has exceeded 30% [1,2]. At the same time, the synchronous acceleration of urbanization and digitalization has made dining out one of the high-frequency social scenes. However, the typical "front desk" space of restaurants actually amplifies the risk of being observed and evaluated by others, putting greater psychological pressure on social anxiety sufferers.

In the above context, social anxiety has changed consumers' psychological expectations and behavioral patterns when dining out. This psychological behavioral change is further transmitted to the scene design, service processes, and even business logic of catering enterprises, thereby reshaping the entire industry.

On a theoretical level, this article introduces the "fear control evaluation" framework of social psychology into the study of catering management, expanding the explanatory boundaries of service scene changes and enriching the literature on consumer psychology driving industry innovation.

On a practical level, this article provides food and beverage operators with product, space, and technology design references based on consumer psychological insights through case studies and data verification, helping them achieve differentiated competition under the trend of "low interaction".

At the social level, this article also attempts to explore the long-term impact of digital self-service on the social nature of urban public spaces, reflecting on whether "low interaction" inevitably leads to the loss of "human touch", and providing a basis for discussion on public policy and business ethics.

2. Theoretical Integration: Evolution of Catering Demand Driven by Social Fear

Social anxiety is defined as the significant and persistent fear or anxiety that an individual experiences due to expected negative evaluations in one or more observable or evaluative situations. The catering scene has become a typical triggering environment for social anxiety due to its dual attributes of "front-end performance" and "service contact" [3].

Social anxiety is mainly reflected in the following three aspects in the catering scene. Firstly, there is verbal interaction anxiety, which refers to the language anxiety caused by the need to communicate with servers or other customers during ordering, inquiry, checkout, and other processes. Next is public self-attention, which refers to individuals strengthening their focus on self-image in open dining spaces due to the perception of being watched by others. Finally, environmental control requirements refer to the intensity of an individual's demand for predictability and intervention of external variables such as service processes, spatial layout, and waiting time.

The Fear of Negative Evaluation (FNE) theory proposed by relevant scholars points out that the core driving force of social anxiety comes from the fear of negative evaluations from others [4]. This study extends it to service scenarios and constructs an "Evaluation Fear Control Model".

Among them, the evaluation of threats is jointly determined by "visibility of others" and "interactive uncertainty". The sense of control depends on the consumer's perception and controllability of the service process, spatial flow, and information transparency. When the perceived threat is high and the sense of control is low, consumers tend to adopt avoidance or self-help strategies to reduce anxiety.

3. Evolution Path of Demand: From "Individual Consumption" to "Zero Contact Service"

3.1. Structure Space Compensation

In the first stage of evaluating the fear control model, consumers are more sensitive to "being seen" than to the interactive process, so catering companies first record the physical space. Specifically, restaurants weaken the visibility of others by reducing the size and visibility of the dining table: traditional four-person square tables are dismantled into single bar counters set along the wall, or embedded with wooden, frosted glass, green plants, and other semi high partition booths. The lighting system has been changed from uniform scattering to low-level focusing, further reducing the 'stage aperture'. At the same time, the menu has been repriced as small portions and single items, which not only lowers the economic threshold for dining alone, but also weakens the social label of "one person occupying one table". The Japanese Lamian Noodles store took the lead in launching the "Taste Concentration Mat", which wraps the body and sight of customers with a wooden lattice enclosed on three sides. Its design inspiration comes from the single reading table of the library, so that customers can be "reasonably hidden" at both the physical and symbolic levels. The effect of space compensation was verified by data: after a chain Lamian Noodles brand introduced a single compartment, the proportion of single customers increased from 18% to 42%, the turnover rate increased by 1.3 times, and the "watched anxiety" score in the customer questionnaire decreased by 30% [5].

3.2. Interaction - Process Compensation

When spatial concealment can no longer completely eliminate verbal interaction anxiety, enterprises enter the second stage of replacing interpersonal interaction with information technology. Scan code ordering, app preordering, self-service Kiosk, mobile payment, and intelligent call system together form a "screen intermediary" network, replacing service flow with information flow. Customers can browse high-definition menus, view calorie and allergen information, use coupons, and complete payments on their mobile phones or terminals without making any sound during the

entire process. The kitchen and front desk synchronize the order status in real time through digital signage, and customers only need to pick up their meals according to the screen or vibration prompts [6]. After McDonald's deployed self-service ordering machines on a large scale in its Chinese stores, the average queue time decreased from 3.5 minutes to 1.8 minutes, and the customer "communication anxiety" scale score decreased by 26%. However, the satisfaction decline of the elderly due to the technological gap only accounted for 5% of the overall sample, proving the priority effect of technological substitution in young social anxiety groups [6]. Furthermore, Luckin Coffee's "self-pickup cabinet" mode transforms "waiting" into a controllable variable: customers select the expected arrival time in the app, and the system dynamically adjusts the extraction sequence to ensure that the beverage maintains the optimal temperature within 30 seconds of scanning the code to open the cabinet, thereby reducing uncertainty to "second level" accuracy [7].

3.3. Environment - Control Compensation

When spatial concealment and process self-service are still insufficient to meet the demand for a sense of control over the entire process, enterprises enter the third stage and drive "uncertainty" to a negligible threshold through a technology environment integrated system. The one-way streamline design creates a linear path for customers from entering to leaving the store, avoiding reverse or wandering. The visualized kitchen projects the meal preparation time and operation nodes in real time on the entrance screen, and with the help of Radio Frequency Identification tray positioning, customers can track their meals like tracking express delivery. The delivery robot and automatic recycling conveyor belt transform "being served" into "being transmitted by the system", completely eliminating the possibility of interpersonal evaluation. Taking Haidilao Smart Restaurant as an example, after customers sit in, they scan the code to place an order. The system automatically assigns mechanical arm side dishes, and the Automated Guided Vehicle (AGV) car delivers the dishes to the table along the ceiling track. After customers finish dining, they put the plates into the recycling bin, and the conveyor belt automatically weighs and scores them. The entire process only requires customers to scan and interact with the screen and robot twice, while the rest of the steps are fully automated. According to operational data, the store's labor costs have been reduced by 20%, and customer ratings for "full process control" have increased by 40%. However, negative feedback for "lack of human touch" only accounts for 3%, indicating that technical compensation can achieve a new balance between efficiency and experience.

In summary, social anxiety drives consumer demand to evolve along a ladder like path of "single person consumption quiet dining zero contact service" through the psychological mechanism of "increased threat evaluation and decreased sense of control". The response of catering enterprises has correspondingly shifted from spatial reconfiguration to process redesign, ultimately moving towards a systematic innovation of technology environment integration [8,9]. This mapping not only reveals the entire process of consumers' psychological variables systematically reshaping the service model of the catering industry through the "perception emotion behavior" chain but also provides a testable theoretical framework for subsequent empirical research.

4. Catering Industry's Response and Transformation

4.1. Technology Makes' Silence' Feasible

Driven by social anxiety, catering enterprises have achieved "no need to speak" ordering and pickup through various technological means, greatly enhancing customers' dining experience. Mobile ordering platforms (such as WeChat or brand apps) allow customers to browse menus, make payments, and select estimated pickup times before arriving at the restaurant. This advanced planning not only reduces customers' waiting time in the restaurant, but also reduces anxiety caused by on-site ordering. The in-store self-service terminal (Kiosk) provides a convenient way for customers who come to the store temporarily to order. Its intuitive operation interface and rich menu display allow customers to choose dishes independently without having to communicate too much with the waiter.

The intelligent call and pickup system replace traditional manual calls through screens, lights, or vibration prompts, further reducing interpersonal interaction and avoiding customers' embarrassment and anxiety during the waiting process.

In addition, some restaurants have also introduced voice ordering technology, where customers can complete their orders through voice commands. This technology not only facilitates customers who are not good at using electronic devices but also provides a more natural way for social anxiety sufferers to order. For example, a voice ordering system can use natural language processing technology to understand customers' voice commands and provide corresponding menu recommendations and confirmation information, making the ordering process smoother.

4.2. Space and Service Stress Reduction Design

In terms of spatial design, the restaurant reduces the possibility of customers being watched by adding single seats and partitions. For example, some restaurants have transformed the traditional four-person square table into a single bar counter or embedded wooden, frosted glass, green plants and other semi-high partition booths. This design not only provides customers with a relatively independent dining space but also enhances the semi-high of privacy. The lighting system has also changed from uniform scattering to low-level focusing, further reducing the "stage aperture" and minimizing the feeling of customers being watched during the dining process [10].

In terms of service process, the restaurant's service process has been streamlined, with servers only intervening when customers actively signal, and the rest of the process completed by visual guidance and digital prompts. For example, some restaurants have set up clear signs at the entrance to guide customers through the entire process of picking up, dining, and recycling utensils without excessive intervention from servers. This self-service not only improves the operational efficiency of the restaurant, but also reduces direct contact between customers and servers, and lowers the psychological burden of social anxiety sufferers. In addition, restaurants can further optimize customers' dining experience by setting up dedicated self-service pick-up areas.

4.3. Impact of Business Model

The above-mentioned technologies and design improvements have brought significant efficiency and cost advantages. The queue duration during peak hours has been shortened, the demand for front desk manpower has decreased, and it has attracted segmented customer groups that are sensitive to low social pressure. By introducing a self-service ordering system and individual compartments, the restaurant not only improves operational efficiency but also enhances the dining experience for customers [11]. This model is not only applicable to fast food chains, but also gradually adopted by some formal restaurants.

However, the initial investment in hardware and software may be high, and some elderly customers or low digital literacy groups may face adaptation difficulties. For example, some elderly customers may not be familiar with the operation of the self-service ordering system, resulting in an unpleasant dining process [12]. In addition, excessive automation may also weaken the human touch of traditional catering, requiring a sustained balance between efficiency and experience. For example, some restaurants have introduced delivery robots, which have improved delivery efficiency, but some customers have reported a lack of interaction with servers, making the dining process appear somewhat dull.

To address these challenges, catering enterprises can take some measures to balance technological applications with humanized services. For example, restaurants can add voice prompts and operational guidance in their self-service ordering system to help elderly customers or customers who are not familiar with technology complete their orders smoothly. At the same time, restaurants can also provide self-service during peak hours and increase the proactive service of waiters during non-peak hours to meet the needs of different customers. In addition, restaurants can train their employees to enhance their service awareness and communication skills, ensuring that while providing efficient service, they can also provide customers with a warm dining experience [13].

5. Conclusion

This article adopts a combination of theoretical analysis and case studies to analyze how social fear affects consumers' psychological expectations and behavioral patterns when dining out, as well as the coping strategies of catering enterprises. It summarizes that social fear triggers consumers' demand for "one person eating" space and their desire to reduce interaction, thereby promoting changes in space design, service processes, and technological applications in catering enterprises. Further elaborated on how this psychological behavioral change is transmitted to the scene design, service processes, and even business logic of catering enterprises, thereby reshaping the entire industry, specifically manifested in the transformation from the traditional high interaction service model to the "optional low interaction/self-service" model.

It is suggested that catering enterprises should not only make full use of technological means to improve operational efficiency and customer experience when dealing with changes in demand caused by social anxiety but also pay attention to retaining moderate interpersonal touchpoints to avoid losing human touch due to excessive automation. At the same time, enterprises should pay attention to the differences in needs of different customer groups, especially elderly customers or low digital literacy groups, and ensure that all customers can enjoy a convenient and comfortable dining experience by increasing operational guidance and providing diversified service choices.

In the future, with the continuous maturity of technology and further changes in consumer demand, the "low interaction" service model may become a common trend in the catering industry. Catering enterprises need to find the best balance between technology application, spatial design, and service mode, which not only meets consumers' demand for low social pressure, but also preserves the social attributes of catering and enhances the overall customer experience. In addition, companies need to pay attention to social equity issues in technology applications to ensure that the popularization of technology does not lead to the marginalization of certain groups. How to maintain the social essence of catering while improving efficiency will be an important proposition that the industry and academia will face together in the future.

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