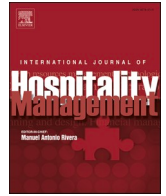




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Cultivating initial trust in ghost kitchens: A mixed-methods investigation of antecedents and consequences

Yangyang Jiang^{a,*}, M.S. Balaji^b, Cenhua Lyu^c

^a Nottingham University Business School China, University of Nottingham Ningbo China, 199 Taikang East Road, Ningbo 315100, China

^b Department of Marketing, Rennes School of Business, 2 rue Robert d'Arbrissel CS 76522, Rennes 35065, France

^c Ningbo University–University of Angers Joint Institute, Ningbo University, 616 Fenghua Road, Ningbo 315211 China

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ABSTRACT

This study examines the antecedents and consequences of customer initial trust in ghost kitchens. A sequential mixed-methods approach, consisting of a quantitative survey followed by a qualitative inquiry, was employed to gain an in-depth understanding of the inter-relationships between constructs in the conceptual framework. Through the quantitative study, we found that food safety, economic value, personalization, food authenticity, and multisensory experience each positively influence customers' initial trust in the ghost kitchen, which in turn, has a positive impact on advocacy and repurchase intentions. Risk attitude moderates the relationship between initial trust and repurchase intention, such that the higher the tendency to take risks, the stronger the relationship between initial trust and repurchase intention. Meta-inferences were then delineated based on the qualitative study to explore plausible reasons behind the results that contradicted the research hypotheses. The study findings offer novel insights into the customer trust-building process in ghost kitchens.

1. Introduction

Digital transformation in hospitality has been seen as a paradigm shift in how restaurants operate and food services are offered, leading to the rapid growth of ghost kitchens (Cheng et al., 2023). Ghost kitchens, also known as virtual kitchens, dark kitchens, or cloud kitchens, represent a new business model changing the landscape of the hospitality sector (Khan, 2020). They are commercial food preparation facilities designed for providing delivery-only meals. No dine-in amenities or direct interactions between customers and staff exist, showing the extent to which traditional restaurant operations have changed (Cai et al., 2022). Ghost kitchens are a strategic shift toward simple and minimalist food service operations, with less capital, lower operational costs, and fewer staff requirements (Hakim et al., 2022). A report by Research and Markets (2023) stated that the global ghost kitchen market could reach US\$112.53 billion by 2027. Another report by Euromonitor (2020) predicted that by 2030, ghost kitchens might account for 50% of the global drive-through and takeaway food service markets. This rapid growth can be attributed to several factors, including the increasing demand for convenience, changes in customer lifestyle, and the impact of the COVID-19 pandemic. The dynamic digital landscape is also playing a critical role in shaping this trend (Kulshreshtha and Sharma,

2022; Pookulangara et al., 2023).

Despite the promising outlook, ghost kitchens face challenges. Nearly 70% of customers prefer ordering food from physical restaurants over ghost kitchens (Leung et al., 2023). The lack of physical premises and direct human interactions can lead to uncertainty and skepticism among customers (Hakim et al., 2022). Concerns about invisible food preparation and possible safety threats exacerbate trust issues (Cai et al., 2022). Therefore, ghost kitchens must address these trust-related challenges to build a loyal customer base. The uncertainties and risks that customers encounter with ghost kitchens emphasize the crucial role of "initial trust." Initial trust is customers' willingness to rely on a service provider with whom they have no or limited experience (Lu et al., 2020; Song et al., 2023). This trust emerges at the beginning of an exchange relationship when the customer is still getting to know the service provider (Akhtar et al., 2022). With little interaction or experience with ghost kitchens, customers often rely on initial trust to guide their decision-making. Initial trust is particularly significant because it shapes customers' first impressions and willingness to engage. This emphasis on initial trust is especially pertinent in the context of ghost kitchens, where the absence of a tangible, physical presence requires a strong foundation of trust from the beginning of the customer relationship. However, limited attention has been focused on factors determining customers'

* Corresponding author.

E-mail addresses: yangyang.jiang@nottingham.edu.cn (Y. Jiang), Balaji.makam@rennes-sb.com (M.S. Balaji), cenhua.lyu@foxmail.com (C. Lyu).

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initial trust and how it affects customer outcomes in ghost kitchens. This study aims to address this gap by examining the antecedents and consequences of initial trust in the context of ghost kitchens.

Previous research on initial trust theory (McKnight et al., 1998) suggests that initial trust stems from cognition- and institution-based trusts. Whereas cognition-based trust focuses on cognitive cues, institution-based trust involves the presence of guarantees (McKnight et al., 1998). Although the evaluation of ghost kitchens is a multifaceted process (Nguyen and Nguyen, 2023), this study focuses on food-related factors as key determinants of initial trust. Since ghost kitchens lack a physical presence, food-related factors become the primary touchpoint for customers in their evaluation (Leung et al., 2023). Furthermore, personal attitudes and unique aspects of the consumption situation significantly shape customer behaviors induced by trust, especially in new business models such as ghost kitchens (Cai et al., 2022).

Drawing on initial trust theory, this study proposes that food-related factors, including menu variety, food safety, economic value, personalization, multisensory experience, and food authenticity, would affect customers' initial trust in ghost kitchens. This initial trust influences customers' repurchase and advocacy intentions, with the effect further determined by context-specific factors such as environmental concern and risk attitude. The proposed research model aligns well with the initial trust theory, which indicates that customer trust in an unfamiliar service provider depends on its ability, benevolence, and integrity (Park and Tussyadiah, 2020). Specifically, menu variety and food safety relate to the ghost kitchen's ability and competence in fulfilling customer needs (Tussyadiah et al., 2020), while economic value and personalization suggest benevolence and reflect customers' perception that the service provider is acting in their best interests (Cheng et al., 2019). Food authenticity and multisensory experience demonstrate the integrity of ghost kitchens to adhere to their stated commitments and ethical standards (Cheng et al., 2019).

Initial trust theory suggests that trust is a continuous process that can lead to enduring outcomes, such as the likelihood to return to a service provider (repurchase intention) and recommend the service provider to others (advocacy intention; Kim, 2012). We propose that context-specific factors, such as environmental concern and risk attitude, moderate the effects of initial trust on customer outcomes. This is because context-specific factors shape individual perceptions and decisions, thereby influencing the outcomes of initial trust (Sharma et al., 2021; Chakraborty et al., 2022).

The present study examines the antecedent role of food-related factors (menu variety, food safety, economic value, personalization, multisensory experience, and food authenticity) in determining initial trust in ghost kitchens. Furthermore, it investigates the impact of initial trust on repurchase and advocacy intentions. Finally, it explores the moderating role of context-specific factors (environmental concern and risk attitude) in the influence of initial trust on consequential outcomes. The proposed relationships were examined using a sequential mixed-methods approach, with a quantitative study carried out to empirically test the relationships, followed by a qualitative study to further explore the relationships not supported by the quantitative study. Such a design offers a more thorough understanding of the study objectives by combining statistical results with an in-depth exploration of underlying relationships.

This study contributes to the literature in several ways. First, although a growing body of research on digital transformation in hospitality has focused on the adoption of digital technologies (Cheng et al., 2023; Jayawardena et al., 2023), our study uniquely investigates how these transformations influence consumer perception and evaluation in the ghost kitchen context. Second, the rising popularity and distinctive characteristics of ghost kitchens have sparked interest in the customer decision-making process (Cai et al., 2022; Leung et al., 2023; Pookulangara et al., 2023). Our research contributes to this area by exploring factors that foster initial trust and its consequences. Finally, while initial trust has been recognized to play a crucial role in customer acceptance of

new products and services in hospitality settings (Yang et al., 2019; Lu et al., 2020; Aityoussef and Belhacen, 2022), it has received limited attention in the ghost kitchen context (Zhao and Bacao, 2020; Tussyadiah et al., 2020). Our study is among the first to examine how initial trust functions in ghost kitchens. Through our investigation of both food-related and context-specific factors, we offer fresh insights into the mechanism of initial trust-building in rapidly emerging services such as ghost kitchens.

2. Theoretical background

This section provides a comprehensive description of the central concepts of our study: ghost kitchens and initial trust. It begins with an in-depth discussion of the evolving literature on ghost kitchens and then explores the concept of initial trust in hospitality and tourism settings. The theoretical background on ghost kitchens and initial trust forms the basis of our hypothesis development.

2.1. Ghost kitchens

The restaurant sector is experiencing a significant change with the rise of ghost kitchens (Kulshreshtha and Sharma, 2022). Ghost kitchens gained popularity in the 2010s with the growth of online food delivery platforms. However, the COVID-19 pandemic significantly increased their popularity among customers (Pookulangara et al., 2023). Ghost kitchens now operate in various ways. They can be independent restaurateurs, such as Unfurl and Virt Brands, or an extension of established restaurant brands, such as Bowl Restaurant Farmesa by Chipotle. They may also be standalone entities partnering with well-known restaurants or third-party businesses, such as Kroger partnering with Kitchen United and Chick-fil-A launching its shared ghost kitchen with DoorDash (Cai et al., 2022; Giousmpasoglou et al., 2023). Hakim et al. (2023) identified six models of ghost kitchens: independent, shell-type, franchises, virtual kitchens in a standard restaurant (different menu), virtual kitchens in a standard restaurant (similar menu), and home-based dark kitchens.

Traditional brick-and-mortar restaurant services underscore social encounters in the form of face-to-face interactions between the customer, service personnel, and service organization. However, technological progress has reshaped the method of ordering food online. The ghost kitchen prepares the meals, and the courier or third party delivers them to the customer. This results in the formation of a new service triad of customer, ghost kitchen, and delivery service (Giousmpasoglou et al., 2023; Pookulangara et al., 2023). Although the new service triad provides many advantages for ghost kitchens, it also introduces complexities by altering the dynamics of the physical restaurant space and customer-restaurant relationship.

Given that ghost kitchens lack a brick-and-mortar presence, the existing literature has discussed the impact of digital touchpoints, such as website design, user reviews, and app experience, on customers' purchase intentions. For example, Hakim et al. (2022) found that user experience and the quality of food delivery apps positively influenced customers' intention to pay for ghost kitchens. They also noted that the content provided on the apps about ghost kitchens and the presentation of these restaurants within the apps played influential roles in customers' decision-making. Nigro et al. (2022) underscored the importance of social influence (e.g., testimonials, recommendations from influencers, word-of-mouth from social networks) in forming customers' purchase intentions toward ghost kitchens. Pookulangara et al. (2023) suggested establishing visually appealing websites for ghost kitchen operators, improving the user interface of such sites, and providing attractive content on the landing pages to improve customers' perception of trust.

Prior research reveals other factors that affect customers' decision-making in the ghost kitchen context. Kulshreshtha and Sharma (2022) found that courteous employees and customer support have the most significant impact on Generation Z customers' purchase decisions in

ghost kitchens. Using prospect theory, Cai et al. (2022) found that customers' ongoing trust in ghost kitchens was positively affected by personal and societal benefits but negatively influenced by societal risks. Similarly, based on the theory of consumption value, Pookulangara et al. (2023) found that customer perception of innovation, their utility motivations for price and food variety, and their hedonic motivations positively influenced their trust in ghost kitchens. In a systematic literature review, Gioumpasoglou et al. (2023) provided insights into employees' working conditions and agreements, turnover, and exploitation in the context of ghost kitchens. Most recently, Leung et al. (2023) demonstrated that consumers exhibited higher purchase intentions for virtual kitchens when they attributed the adoption of the virtual kitchen to external reasons (e.g., labor shortages).

Although previous studies offer a preliminary understanding of the ghost kitchen business model and customer decision-making, scant research exists on the development of customers' initial trust in ghost kitchens. Considering the unique business model, where direct customer interactions and physical facilities are absent, initial trust becomes a critical factor in determining ongoing trust and patronage. Therefore, addressing initial trust in ghost kitchens can enhance customer confidence and foster a long-term customer relationship.

2.2. Initial trust in hospitality and tourism

According to initial trust theory (McKnight et al., 2002), the development of trust is a dynamic process (Kim, 2012). The trust lifecycle can be divided into three main phases: initial trust (trust-building), ongoing trust (trust stability), and distrust (dissolution of trust; Rousseau et al., 1998). Unlike ongoing trust, which is built over time and through multiple interactions, initial trust represents the original judgment formed during the early stages of the interaction or relationship with an unfamiliar service provider (Song et al., 2023). In other words, initial trust is the willingness of customers to rely on the ghost kitchen, which may develop after their initial interaction or experience (Prayag and Ozanne, 2018). Notably, initial trust can also be formed in the absence of prior customer interaction because trust is dynamic and evolving (McKnight et al., 1998). This aspect of initial trust formation is particularly relevant in the context of ghost kitchens, where direct interactions are often limited (Thompson et al., 2019). Initial trust may serve as a robust indicator of customer attitudes and outcomes in the later consumption stage, such as repurchase and recommendation intentions (van der Werff and Buckley, 2017). Previous research has employed initial trust theory to investigate new product and service adoption (Farooq et al., 2021; Pathania et al., 2022) and the formation of new organizational relationships among employees (van der Werff and Buckley, 2017).

The establishment of initial trust involves four steps: (1) customers gather and assimilate information about the service provider and the pertinent consumption situation; (2) based on the information obtained in the preceding stage, customers make decisions that reflect their perception of the service provider's trustworthiness; (3) if the service provider is perceived as sufficiently trustworthy, customers enter a provisional relationship of initial trust; and (4) customers intend to carry out their first transaction with the service provider. Satisfactory outcomes from the initial purchase may prompt customers to engage in subsequent interactions and experiences with the service provider, fostering a transition from initial trust to ongoing trust (Kim, 2012). As such, initial trust plays a critical role because it forms the foundation upon which long-term, ongoing trust is developed, potentially leading to sustainable customer relationships and loyalty.

Initial trust reduces perceived risks and uncertainties related to trying new products and services, fostering comfort in experimentation and potentially leading to customer loyalty (Choudrie et al., 2018; Song et al., 2023). Previous research has found that product features (e.g., functionality, integration), service attributes (e.g., service quality, ease of use), service provider characteristics (e.g., reputation, guarantees),

and customer characteristics (e.g., awareness, social influence) are antecedents of customers' initial trust. In turn, this increases customer engagement and intentions to use products and services (Shankar and Jebarajakirthy, 2019; Osakwe et al., 2022). In the hospitality and tourism service context, Luo and Zhang (2016) explored travelers' initial trust and the entire process of trust-building toward the couchsurfing community. Jensen and Wagner (2018) found that trust propensity positively influenced Millennials' initial trust toward an e-travel website. Tussyadiah et al. (2020) found that trusting beliefs in service robots had a positive impact on trusting intentions.

Due to ghost kitchens' inherent remoteness and lack of direct interactions, trust-building is somewhat challenging compared to traditional dine-in restaurants (Cai et al., 2022). In particular, initial trust becomes crucial because it often forms the basis for customers' attitudes and behaviors (Song et al., 2023). Examining the determinants and outcomes of initial trust in ghost kitchens not only fills a significant research gap but also provides actionable insights for these new establishments to increase customer acceptance and engagement and ensure the sustainability of their operations. Based on the insights provided by the extant literature, we develop a conceptual framework examining the role of food-related factors and contextual factors in determining customers' initial trust in ghost kitchens. The relationships between these factors and initial trust are discussed in detail in the following sections.

3. Hypothesis development

Building on the theoretical background, this section aims to develop the research hypotheses. We propose that food-related factors (menu variety, food safety, economic value, personalization, multi-sensory experience, and food authenticity) are key antecedents of initial trust, which in turn, leads to repurchase and advocacy intentions. Furthermore, context-specific factors (customers' environmental concern and risk attitude) influence the outcomes of initial trust. Fig. 1 presents the conceptual framework of our study.

3.1. Antecedents of initial trust

Menu variety is defined as the ability of the ghost kitchen to offer a broad range of food choices (Cho et al., 2020). It reflects the diversity of the menu regarding cooking methods, flavors, textures, shapes, colors, and temperatures (Baiomy et al., 2019). Menu variety is a vital factor that affects the dining experience and restaurant patronage (Naderi et al., 2018). In the traditional dining context, previous research has shown that menu variety has a positive impact on customers' value perceptions and behavioral intentions (Baiomy et al., 2019; Cho et al., 2020). We propose that menu variety fosters initial trust by demonstrating the competence and adaptability of the ghost kitchen to meet diverse customer needs and preferences. Previous studies provide some preliminary evidence for the role of menu variety in the ghost kitchen context. For example, Kulshreshtha and Sharma (2022) found that food quality and menu variety positively impacted Generation Z customers' purchase decisions toward ghost kitchens. Pookulangara et al. (2023) demonstrated that food variety, as a utility motivation, positively influenced customers' general trust toward cloud kitchens. These studies suggest that menu variety is instrumental in fostering initial trust. By offering a range of food choices, ghost kitchens demonstrate their competence and adaptability in meeting various customer needs and preferences. This enhances the perceived value and contributes to building initial trust in ghost kitchens, especially when limited direct interactions exist. Thus, we hypothesize that:

H₁. Menu variety has a positive impact on customers' initial trust in ghost kitchens.

Perceived food safety refers to the customer's perception regarding the measures a ghost kitchen takes to ensure the food is free from harmful chemical substances, pesticides, and pathogens and is safe to eat

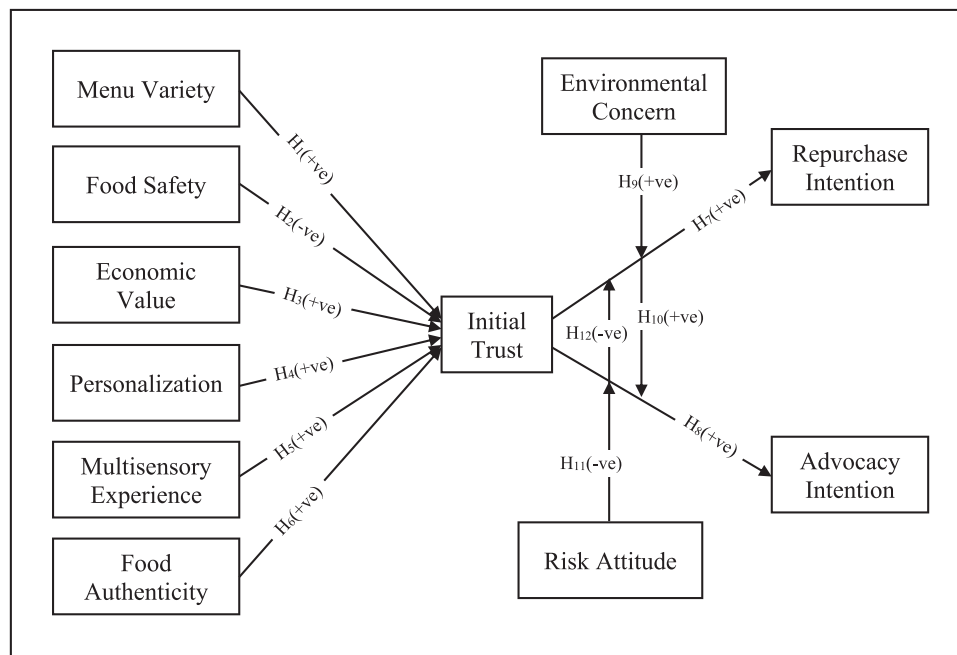


Fig. 1. Conceptual framework.

(Foroughi et al., 2023). We propose that food safety plays a key role in determining initial trust toward ghost kitchens. This is because customers who order food online are particularly concerned about hygienic conditions of food preparation, packaging, and delivery (Soon, 2019). Moreover, due to the COVID-19 pandemic, customers have become more concerned about health and hygiene issues, fearing exposure to specific viruses and diseases (Wen et al., 2020). Inadequate food safety practices and procedures in food service can result in unanticipated or unidentified contaminants in food, which may cause foodborne diseases (Pookulangara et al., 2023). In the ghost kitchen context, employee hygiene, temperature control, and cross-contamination may threaten food safety during food preparation. Previous research has shown that perceived food safety positively affects the customer's intention to purchase food from ghost kitchens (Hakim et al., 2022). According to the aforementioned literature, perceived food safety emerges as a critical factor determining initial trust for ghost kitchens. As customers increasingly prioritize health and hygiene, especially following the pandemic, their perception of food safety may directly affect their initial trust in ghost kitchens. Thus, we propose that:

H₂. . Perceived food safety has a positive impact on customers' initial trust in ghost kitchens.

Economic value is about not only cost savings but also the overall value or benefit derived from ordering food from ghost kitchens, including the convenience and quality provided related to the price paid (Hakim et al., 2022; Jiang et al., 2019). This sense of "value" or "a good deal" can help to develop initial trust because it indicates the willingness of the ghost kitchen to deliver high-quality food services at a reasonable price, signaling benevolence in understanding and meeting customer needs. In comparison to setting up a dine-in restaurant, ghost kitchens require less rent and fewer staff so their operating costs tend to be lower (Kulshreshtha and Sharma, 2022). This allows the ghost kitchen to offer food to customers at competitive prices, which can enhance the perception of fairness and affect customers' evaluations (Jiang et al., 2022). For example, Pookulangara et al. (2023) found that utility motivation positively influenced customers' general trust in ghost kitchens. Based on the above research, perceived economic value, which reflects the ability of ghost kitchens to offer quality services at competitive prices, fosters a sense of fairness. This perception of fairness

increases customer confidence in choosing ghost kitchens over traditional dining options. Thus, we propose that:

H₃. . Economic value has a positive impact on customers' initial trust in ghost kitchens.

Personalization is the ability of ghost kitchens to offer customers food and services tailored to their preferences and requirements (Su et al., 2022). Personalization has been recognized as the most important factor in fostering customers' cognitive and emotional trust in online vendors (Komiak and Benbasat, 2006). Traditional restaurant service providers may have many opportunities (e.g., greeting, seating, food ordering, ambiance) to establish a trusting relationship with guests through face-to-face interactions. However, these opportunities do not exist in ghost kitchens. Personalization can help ghost kitchens overcome the lack of interpersonal interactions required to establish a trusting relationship with customers by identifying and meeting their needs (Stoecklin-Serino and Paradise, 2009). Therefore, customers are more likely to feel that they will be satisfied by ghost kitchens with personalized service, which facilitates the development of initial trust. Moreover, personalized experiences promote a perception of benevolence because this implies the ghost kitchen's genuine intent to cater to the unique preferences of customers, thereby developing initial trust. Recently, Su et al. (2022) found that personalization of mobile food delivery service can improve trust and loyalty. Through personalization, ghost kitchens demonstrate a commitment to meeting customer needs more effectively. This is essential in developing initial trust. Thus, the following hypothesis is postulated:

H₄. . Personalization has a positive impact on customers' initial trust in ghost kitchens.

Food authenticity means the degree to which ingredients or culinary preparations are specific to a particular geographical location, as well as whether the food is prepared traditionally, with locally sourced ingredients, or by locals (Liu et al., 2018; Yang et al., 2022). Service providers can also improve customers' perception of food authenticity through improved transparency about food-making procedures, such as by providing methods to authenticate the geographical origins of ingredients (Martinez and Epelbaum, 2011), thereby enhancing the customer perception of the ghost kitchen's integrity. Previous research

on the restaurant dining experience has indicated the important role of food authenticity in forming customers' purchase intentions (Yang et al., 2022). Following the above discussion, we argue that customers' perceptions of food authenticity contribute to the development of initial trust in ghost kitchens. Given that face-to-face customer interaction is absent or limited, the need for transparency regarding the food's origin and preparation is accentuated. This transparency provides assurance that facilitates the development of initial trust. Therefore, we propose that:

H₅ . Food authenticity has a positive impact on customers' initial trust in ghost kitchens.

Multisensory experience refers to the integration of multiple sensory inputs - visual, auditory, olfactory, gustatory, and tactile - that customers receive throughout their interaction with the ghost kitchen (Hultén, 2011). In this context, multisensory experience can be achieved through the careful packaging and presentation of food, where visual appeal and tactile experience are considered. QR codes or links embedded in the app or on the packaging, which lead customers to curated playlists or videos, provide auditory experiences. The inclusion of high-temperature reminders or heating instructions can engage the sense of touch. Even the aroma of the food, secured by high-quality packaging, contributes to this multisensory experience. A well-crafted multisensory experience, even within the constraints of a delivery-only model like the ghost kitchen, reflects the service provider's integrity or commitment to providing a holistic experience, which can foster initial trust. Previous research has suggested that multisensory experience is an important aspect affecting customer perception, evaluation, and behavior. Chen and Lin (2018) found that customers' sensory experience in coffeehouses enhanced positive emotions and purchase intentions. Jiang and Xu (2022) indicated that the sensory appeal of local food had a positive effect on Generation Z tourists' intention to dine at small local restaurants. In line with the above discussion, we propose that multisensory experience is crucial in developing initial trust for ghost kitchens. By engaging multiple senses, ghost kitchens can offer an immersive experience that signals their commitment to delivering quality food. Thus, the following hypothesis is postulated:

H₆ . Multisensory experience has a positive impact on customers' initial trust in ghost kitchens.

3.2. Consequences of initial trust

In previous research on customer adoption of new products and services, initial trust has been shown to significantly influence usage intentions, loyalty, and recommendation intentions (Shankar and Jebarajakirthy, 2019; Osakwe et al., 2022). Extant research demonstrates that customers' general trust positively influences their attitude toward ghost kitchens (Pookulangara et al., 2023), purchase intentions, and word-of-mouth (WOM) intentions (Cai et al., 2022). Considering the importance of initial trust in customers' decision-making process, we propose the following hypotheses:

H₇ . Customers' initial trust in ghost kitchens has a positive impact on their advocacy intention.

H₈ . Customers' initial trust in ghost kitchens has a positive impact on their repurchase intention.

Environmental concern captures a customer's overarching attitude and disposition toward environmental issues, such as environmental degradation and air pollution (Schultz et al., 2004). It reflects customers' engagement and investment in environmental issues (Kim et al., 2016). Ghost kitchens contribute to environmental benefits through various practices. For example, the absence of dine-in facilities significantly reduces energy consumption compared to traditional restaurants (González-Aleu et al., 2022). By employing fewer staff and providing

delivery-only meals, ghost kitchens can reduce their carbon footprints (Cai et al., 2022). Additionally, ghost kitchens often adopt sustainable practices in packaging and food waste management, further enhancing their environmental appeal (Kulshreshtha and Sharma, 2022). These sustainability practices resonate strongly with consumers with high environmental concern (Kwok et al., 2016). This may lead to a stronger relationship between initial trust and behavioral outcomes in these consumers because they evaluate the sustainability practices of ghost kitchens to align with their values. When such consumers see their environmental values reflected in the ghost kitchen, it enhances their trust, positively influencing their repurchase and advocacy intentions. Therefore, we argue that the positive influence of initial trust on repurchase and advocacy intentions might be more pronounced among customers who exhibit a higher level of environmental concern than those who are less environmentally conscious.

H₉ . Environmental concern moderates the relationship between initial trust and repurchase intention, such that the higher the environmental concern, the stronger the relationship between initial trust and repurchase intention.

H₁₀ . Environmental concern moderates the relationship between initial trust and advocacy intention, such that the higher the environmental concern, the stronger the relationship between initial trust and advocacy intention.

Risk attitudes refer to customers' general tendency to avoid taking risks when making decisions with uncertain consequences (Rohrmann, 1998). Customers with a low-risk attitude are more risk-averse and prefer safety. They are less confident in making risky decisions. In contrast, those with high-risk attitudes are more tolerant of uncertainty and confident when making risky choices (Quevedo-Silva et al., 2020; Zheng et al., 2018). The risk attitude may counteract trust because people with a low-risk attitude are less likely to patronize ghost kitchens due to their higher perceptions of risks, such as concerns for food safety and quality, associated with these new dining formats (Cai et al., 2022). For example, Tian et al. (2022) examined the moderating effect of risk attitude on the relationship between trust and behavioral intentions in the sharing accommodation context. They found that, compared with customers who are risk-averse and risk-neutral, the positive influence of trust on behavioral intention was more pronounced among risk-preferring customers. Since the ghost kitchen is an emerging hospitality service model with inherent personal and social risks (Cai et al., 2022), consumers with high-risk attitudes are more likely to adopt it because they are comfortable with uncertainty and willing to engage in risky decisions. This openness to taking risks may enhance the effect of initial trust on their repurchase and advocacy intentions since they tend to place greater importance on its innovative aspects. Accordingly, we propose that:

H₁₁ . Risk attitude moderates the relationship between initial trust and repurchase intention: the higher the tendency to take risks, the stronger the relationship between initial trust and repurchase intention.

H₁₂ . Risk attitude moderates the relationship between initial trust and advocacy intention: the higher the tendency to take risks, the stronger the relationship between initial trust and advocacy intention.

The present study adopts a sequential mixed-methods approach (Creswell, 2003) to examine the proposed hypotheses, underpinned by pragmatism and driven by abductive reasoning. Whereas quantitative study is the primary approach in the current research, qualitative research plays a supportive role. Quantitative research enabled us to examine the relationships between constructs, and a deeper nuanced understanding was acquired through qualitative inquiries.

4. Study 1: Quantitative research

Study 1 empirically examined the antecedents and consequences of

initial trust in ghost kitchens. Specifically, it examined the role of menu variety, food safety, economic value, personalization, multisensory experience, and food authenticity in determining initial trust, as well as the impact of initial trust on repurchase and advocacy intentions. Additionally, the moderating roles of environmental concern and risk attitude were investigated in the relationship between initial trust and its outcomes.

4.1. Methods

4.1.1. Procedures

Prolific Academic, an online crowd-sourcing platform, was used to recruit participants. It provides high-quality data assessed against a

broad range of quality measures, significantly reducing potential bias in data collection (Kapoor et al., 2023; Newman et al., 2021). Samples on Prolific Academic meet standards for good online surveys (Palan and Schitter, 2018). The recruitment of participants was limited to U.S. residents who worked full-time or part-time and had completed 100 surveys with an approval rate of at least 90%.

Participants were recruited for the study in two stages. In the pre-selection stage, 2000 members of the Prolific Academic panel were invited to complete an online questionnaire. We recruited participants who had begun purchasing food from ghost kitchens in the past one month. Selecting participants who had recently begun to order food from ghost kitchens ensured that their experiences and perceptions were relevant and current, making them ideal respondents for examining the

Table 1
Descriptive statistics and measurement model statistics.

Construct	Measures	MN	SD	SK	KU	FL	T
Menu variety ($\alpha = 0.91$, CR = 0.91, AVE = 0.63)	MV1. The menu has dishes that use diverse food ingredients.	4.67	1.62	-0.69	-0.37	0.81	F
	MV2. The menu has dishes that use seasonal food ingredients.	4.08	1.74	-0.08	-0.96	0.77	16.80
	MV3. I can find various types of food on the menu.	4.83	1.65	-0.69	-0.40	0.82	15.71
	MV4. The menu has dishes that use different cooking methods.	4.57	1.60	-0.50	-0.46	0.84	16.04
	MV5. The menu has dishes that contain various food flavors.	4.96	1.52	-0.75	-0.09	0.79	14.94
	MV6. The menu has dishes that contain healthy alternatives.	4.18	1.78	-0.28	-0.96	0.74	13.51
Food safety ($\alpha = 0.97$, CR = 0.97, AVE = 0.88)	FS1. The food served is not safe (R).	4.60	1.53	1.33	1.14	0.94	F
	FS2. The food served has a good chance of making me sick (R).	4.66	1.51	1.35	1.18	0.98	36.92
	FS3. The food served might be contaminated (R).	4.63	1.55	1.18	0.44	0.92	28.85
	FS4. The food served might not be handled safely (R).	4.51	1.60	1.04	0.11	0.92	29.40
Economic value ($\alpha = 0.91$, CR = 0.91, AVE = 0.71)	EV1. The food is good value for money.	4.59	1.51	-0.55	-0.14	0.91	F
	EV2. I find good deals for food ordering.	4.58	1.58	-0.47	-0.53	0.89	21.91
	EV3. The food is an economical alternative to dining in restaurants.	4.65	1.61	-0.52	-0.43	0.76	16.14
	EV4. The food is reasonably priced.	4.79	1.46	-0.73	0.12	0.81	18.39
Personalization ($\alpha = 0.92$, CR = 0.92, AVE = 0.79)	PR1. The ghost kitchen knows my food preferences and offers me suitable food.	4.04	1.71	-0.14	-0.90	0.86	F
	PR2. The ghost kitchen predicts what kind of food I want and makes suggestions.	3.80	1.77	-0.01	-1.11	0.91	20.50
	PR3. The ghost kitchen has features that are personalized for me.	3.67	1.77	0.13	-1.06	0.90	20.11
Multisensory experience ($\alpha = 0.91$, CR = 0.91, AVE = 0.72)	ME1. The food looks nice.	5.48	1.26	-1.27	1.87	0.74	17.41
	ME2. The food smells nice.	5.75	1.13	-1.63	4.08	0.91	14.87
	ME3. The food tastes good.	5.69	1.28	-1.55	2.77	0.86	15.73
	ME4. The food displayed is good.	5.40	1.35	-1.07	0.98	0.87	F
Food authenticity ($\alpha = 0.93$, CR = 0.93, AVE = 0.76)	FA1. The food served is authentic and genuine.	5.25	1.41	-1.09	0.91	0.91	F
	FA2. The ghost kitchen serves authentic local food.	4.76	1.70	-0.67	-0.52	0.82	19.33
	FA3. I perceive the taste of the food as authentic.	5.17	1.44	-1.03	0.77	0.89	22.87
	FA4. I perceive the cooking of dishes as authentic.	5.06	1.52	-0.99	0.39	0.85	20.49
Initial trust ($\alpha = 0.95$, CR = 0.95, AVE = 0.71)	TR1. I perceive the ghost kitchen to be trustworthy.	5.39	1.30	-1.23	1.70	0.87	20.57
	TR2. I trust the ghost kitchen.	5.33	1.37	-1.23	1.36	0.86	20.32
	TR3. I am certain that I can trust the ghost kitchen.	5.13	1.45	-0.93	0.58	0.88	21.12
	TR4. I trust the ghost kitchen to have my best interest at heart.	4.51	1.60	-0.45	-0.49	0.75	15.73
	TR5. The ghost kitchen is interested in my well-being.	4.52	1.59	-0.45	-0.43	0.77	16.56
	TR6. The ghost kitchen is very reliable.	5.23	1.39	-1.03	0.94	0.88	21.52
	TR7. I trust the ghost kitchen to be what it says it will do.	5.33	1.34	-1.20	1.42	0.88	F
Advocacy intention ($\alpha = 0.94$, CR = 0.94, AVE = 0.80)	AI1. I will say positive things.	5.28	1.50	-1.14	0.91	0.71	15.43
	AI2. I will recommend it to someone who seeks my advice.	5.14	1.58	-1.02	0.33	0.95	15.66
	AI3. I will encourage my friends/relatives to order food.	5.03	1.63	-0.91	0.07	0.96	16.54
	AI4. I will defend it from critique.	4.32	1.71	-0.36	-0.79	0.94	F
Repurchase intention ($\alpha = 0.96$, CR = 0.96, AVE = 0.85)	RI1. I intend to keep ordering.	5.11	1.67	-1.02	0.29	0.95	F
	RI2. I will repurchase food.	5.19	1.59	-1.09	0.52	0.95	35.74
	RI3. I have the intention to repurchase food.	5.03	1.66	-0.93	0.09	0.95	34.22
	RI4. It is desirable for me to repurchase food.	5.08	1.62	-0.97	0.18	0.90	28.26
	RI5. This is an acceptable place for me to repurchase food.	5.31	1.50	-1.23	1.26	0.84	22.95
Environmental concern ($\alpha = 0.90$, CR = 0.90, AVE = 0.70)	EC1. We are approaching the limit of the number of people the earth can support.	5.13	1.60	-0.85	0.08	0.79	16.16
	EC2. The balance of nature is very delicate and easily gets upset.	5.31	1.42	-0.92	0.69	0.88	18.75
	EC3. Plants and animals have as many rights as humans to exist.	5.66	1.49	-1.15	0.72	0.80	16.24
	EC4. If things continue in their present condition, we will soon experience a major ecological catastrophe.	5.45	1.51	-0.97	0.43	0.87	F
Risk attitude ($\alpha = 0.87$, CR = 0.89, AVE = 0.62)	RA1. I do not feel comfortable taking chances.	3.79	1.67	0.10	-1.00	0.62	10.24
	RA2. I prefer situations that have foreseeable outcomes.	4.93	1.44	-0.75	0.11	0.84	14.47
	RA3. I am likely to be absolutely sure how things will turn out.	4.76	1.44	-0.52	-0.25	0.87	13.47
	RA4. I avoid situations that have uncertain outcomes.	4.36	1.59	-0.23	-0.78	0.80	13.75
	RA5. I feel nervous when I have to make decisions in uncertain situations.	4.60	1.59	-0.41	-0.62	0.77	F

Measurement model fit statistics: $\chi^2 = 2023.44$, $df = 1105$, $\chi^2/df = 1.833$, $p < .001$, RMSEA = 0.054, IFI = 0.940, TLI = 0.933, and CFI = 0.940.

Notes: MN – Mean, SD – Standard deviation, SK – Skewness, KU – Kurtosis, FL – Standardized factor loading, T – t value, α – Cronbach’s Alpha, CR – Composite Reliability, AVE – Average Variance Extracted.

determinants and consequences of initial trust in ghost kitchens. Furthermore, it minimized potential sources of common method bias and recall bias (Tax et al., 1998; Podsakoff et al., 2003). Those who answered affirmatively to recently ordering from a ghost kitchen were asked to provide its details, including the brand name and location. We reviewed the responses and verified the information online, including checking for the absence of physical dine-in facilities and ensuring that they operated solely as delivery-only services. This verification process guaranteed that appropriate respondents were selected, thereby enhancing the validity of our findings. Out of 452 panel members who met the verification criteria of recent experience with ghost kitchens, we received 300 responses for the main study. Informed consent was received from all participants after describing the study objectives and the nature of the questions.

4.1.2. Measures

The online questionnaire for the main study included five sections. The first asked participants about the details of the ghost kitchen they had experienced. The second section included 25 measurement items on the six antecedents of initial trust: menu variety (six items; Baiomy et al., 2019; Cho et al., 2020), food safety (four items; Harris et al., 2017), economic value (four items; Jiang et al., 2019), personalization (three items; Su et al., 2022), multisensory experience (four items; Chen and Lin, 2018; Jiang and Xu, 2022), and food authenticity (four items; Liu et al., 2018; Yang et al., 2022). The third section contained measures related to initial trust (seven items; Konya-Baumbach et al., 2019), advocacy intention (four items; Kang, 2018), and repurchase intention (five items; Cho et al., 2014). The fourth section included measurement questions on environmental concern (four items; Kim et al., 2016) and risk attitude (five items; Tain et al., 2022). The last section contained questions about demographic data (age and gender). The measurement scale for each construct is presented in Table 1. The measures were selected based on their established reliability and validity in previous research. The use of pre-validated measures enhanced the credibility and generalizability of our study findings. We adapted these measures for the specific context of ghost kitchens and conducted a pretest with 40 participants before using them in the main study. We also used two attention-check questions (If you are reading this question carefully, please select “strongly agree”; If you are reading this question carefully, please select “somewhat disagree”; Paas and Morren, 2018) to ensure participant attentiveness throughout the survey.

4.1.3. Data analysis

The quantitative data were analyzed using a two-stage procedure involving a measurement model test and a structural model test (Anderson and Gerbing, 1988) with AMOS 26.0. The moderating effects of environmental concern and risk attitude were assessed using SPSS PROCESS (Model 1; Hayes, 2017). Before evaluating the hypotheses, descriptive analysis was conducted to ensure the normal distribution and reliability of the study measures.

4.1.4. Respondent profile

A total of 300 responses were obtained. Of these, 13 were excluded because they failed to correctly answer at least one of the two attention-check questions. Among the 287 useable responses, 62.7% of participants ($n = 180$) were male, 38.7% ($n = 111$) were aged between 30 and 39 years, and 66.8% ($n = 192$) were employed full-time.

4.2. Results

4.2.1. Descriptive analysis and common method bias

As shown in Table 1, the normal distribution of the measures was ensured because the values for skewness and kurtosis were within the limits of ± 2 and ± 5 , respectively (Hair et al., 2010).

Procedural and statistical methods were used to address concerns regarding common method bias. Concerning procedural approaches,

respondents were guaranteed anonymity and told that no right or wrong answer existed. Regarding statistical methods, Harman's single-factor analysis revealed that 48.88% of the variance explained by the first factor was less than 50% of the total variance (Podsakoff et al., 2003). The results of a common factor test (Podsakoff et al., 2003) showed that including a latent common method factor resulted in a slight change in fit statistics (< 0.01). Moreover, the collinearity tests showed that the variance inflation factors were between 1.05 and 4.08, well below the threshold of 5. These results suggest that the data is robust against common method bias.

4.2.2. Measurement model results

As shown in Table 1, the measured variables loaded significantly on the latent variables ($p < 0.01$). The reliability of each construct was checked using Cronbach's alpha values, which were acceptable at a threshold of 0.70 (Hair et al., 2010) and ranged from 0.87 to 0.97. The composite reliability of each construct was also above the acceptable threshold of 0.70 (Hair et al., 2010), ranging from 0.89 to 0.97. The average variance extracted (AVE) for each construct was above the threshold of 0.50 and ranged from 0.62 to 0.88. The values of the square root of AVE were greater than the correlations between the constructs (see Table 2). The results validated the convergent and discriminant validity of the study constructs.

The measurement model, including 11 study variables, was then examined (Table 1). The goodness-of-fit statistics of the measurement model were satisfactory ($\chi^2 = 2023.44$, $df = 1105$, $\chi^2/df = 1.833$ [< 3.0], $p < .001$, RMSEA = 0.054 [< 0.08], IFI = 0.940 [> 0.90], TLI = 0.933 [> 0.90], and CFI = 0.940 [> 0.90]). All the model-fit indices of the measurement model met the standard requirements (Hair et al., 2010; Hu and Bentler, 1999; Iacobucci, 2010).

4.2.3. Structural model results

Structural equation modeling was used to test the hypothesized relationships. The fit indices ($\chi^2 = 1624.80$, $df = 743$, $\chi^2/df = 2.187$, $p < .001$, RMSEA = 0.054, IFI = 0.936, TLI = 0.929, and CFI = 0.935) showed that the proposed structural model fits the data well (Hair et al., 2010; Iacobucci, 2010). Approximately 85.4% of the total variance in initial trust was explained by the six antecedents. Furthermore, initial trust explained 77.4% and 66.5% of the total variance in repurchase and advocacy intentions toward ghost kitchens, respectively. Table 3 presents the direct effects of the structural model analysis.

First, the effects of the six antecedents on initial trust were tested. As shown in Table 3, menu variety did not have a significant direct effect on initial trust ($\beta = -0.05$, $p = 0.35$). This does not support H_1 . Food safety ($\beta = 0.14$, $p < 0.01$), economic value ($\beta = 0.24$, $p < 0.01$), personalization ($\beta = 0.09$, $p < 0.05$), food authenticity ($\beta = 0.22$, $p < 0.01$), and multisensory experience ($\beta = 0.49$, $p < 0.01$) had a positive effect on initial trust, supporting H_2 , H_3 , H_4 , H_5 , and H_6 . Initial trust had a positive effect on both advocacy intention ($\beta = 0.82$, $p < 0.01$) and recommendation intention ($\beta = 0.88$, $p < 0.01$), supporting H_7 and H_8 .

The inclusion of control variables (age and gender) in the structural model resulted in a slight change in model-fit statistics (RMSEA = 0.062, IFI = 0.932, TLI = 0.925, CFI = 0.932). Age had a significant influence on advocacy intention ($\beta = 0.08$, $p < 0.05$).

A post hoc analysis of the mediation effect of initial trust was conducted using the indirect effects function in AMOS 26.0. Initial trust mediated the impact of food-related factors (except for menu variety) on repurchase and advocacy intentions ($p < 0.05$). Table 4 presents the results of the mediation analysis. The inclusion of control variables (age and gender) did not change the significance of the mediation results.

Environmental concern did not moderate the effect of initial trust on repurchase intention (interaction: $\beta = 0.01$, $p = 0.84$) or advocacy intention (interaction: $\beta = 0.01$, $p = 0.75$). This does not support H_9 and H_{10} .

Risk attitude negatively moderated the effect of initial trust on repurchase intention (interaction: $\beta = -0.07$, $p < 0.05$). As shown in

Table 2
Discriminant validity.

	1	2	3	4	5	6	7	8	9	10	11
1. Menu variety	0.79										
2. Food safety	0.07	0.94									
3. Economic value	0.50**	0.20**	0.84								
4. Personalization	0.53**	0.05	0.50**	0.89							
5. Multisensory experience	0.47**	0.43**	0.57**	0.33**	0.85						
6. Food authenticity	0.64**	0.32**	0.58**	0.42**	0.71**	0.87					
7. Initial trust	0.51**	0.46**	0.64**	0.46**	0.75**	0.75**	0.84				
8. Advocacy intention	0.45**	0.29**	0.63**	0.41**	0.68**	0.63**	0.70**	0.89			
9. Repurchase intention	0.46**	0.40**	0.66**	0.35**	0.76**	0.66**	0.78**	0.79**	0.92		
10. Environmental concern	-0.01	0.04	0.04	-0.07	0.01	0.03	0.04	-0.04	0.09	0.84	
11. Risk attitude	0.15**	0.11	0.34**	0.26**	0.30**	0.28**	0.41**	0.29**	0.35**	0.14*	0.79
Mean	4.55	2.40	4.65	3.84	5.58	5.06	5.02	4.94	5.14	5.39	4.49
Standard deviation	1.38	1.48	1.37	1.62	1.12	1.38	1.28	1.48	1.51	1.32	1.05

Note: Diagonal values are square root of AVE. **correlation is significant at $p < 0.01$ and *correlation is significant at $p < 0.05$.

Table 3
Structural model results.

Hypothesized paths	Estimate	t-value	p-value
Menu variety → Initial Trust	-0.05	-0.939	0.35
Food safety → Initial Trust	0.14	3.777	< 0.01
Economic value → Initial Trust	0.24	5.032	< 0.01
Personalization → Initial Trust	0.09	2.204	< 0.05
Food authenticity → Initial Trust	0.22	3.106	< 0.01
Multisensory experience → Initial Trust	0.49	7.072	< 0.01
Initial Trust → Advocacy intention	0.82	12.02	< 0.01
Initial Trust → Repurchase intention	0.88	19.25	< 0.01

Structural model fit statistics: $\chi^2 = 1624.80$, $df = 743$, $\chi^2/df = 2.187$, $p < .001$, RMSEA = 0.054, IFI = 0.936, TLI = 0.929, and CFI = 0.935.

Table 4
Mediation effects of initial trust.

Mediation Paths	Indirect Effect (SE) (95%CI), p value
Menu variety → Initial Trust → Repurchase Intention	-0.04(0.05) [-0.12 to 0.04], $p = 0.42$
Food safety → Initial Trust → Repurchase Intention	0.12(0.04) [0.05–0.19], $p < 0.05$
Economic value → Initial Trust → Repurchase Intention	0.21(0.05) [0.12–0.29], $p < 0.01$
Personalization → Initial Trust → Repurchase Intention	0.08(0.04) [0.02–0.14], $p < 0.05$
Multisensory experience → Initial Trust → Repurchase Intention	0.43(0.07) [0.32–0.54], $p < 0.01$
Food Authenticity → Initial Trust → Repurchase Intention	0.19(0.07) [0.08–0.30], $p < 0.05$
Menu variety → Initial Trust → Advocacy Intention	-0.04(0.05) [-0.11 to 0.04], $p = 0.42$
Food safety → Initial Trust → Advocacy Intention	0.11(0.04) [0.04–0.18], $p < 0.05$
Economic value → Initial Trust → Advocacy Intention	0.19(0.05) [0.11–0.27], $p < 0.01$
Personalization → Initial Trust → Advocacy Intention	0.07(0.04) [0.02–0.13], $p < 0.05$
Multisensory experience → Initial Trust → Advocacy Intention	0.40(0.07) [0.29–0.51], $p < 0.01$
Food Authenticity → Initial Trust → Advocacy Intention	0.18(0.06) [0.07–0.28], $p < 0.05$

Fig. 2, for consumers with high-risk attitudes, initial trust led to higher repurchase intention. This supports H₁₁. We did not find support for H₁₂ because the interaction between risk attitude and initial trust did not

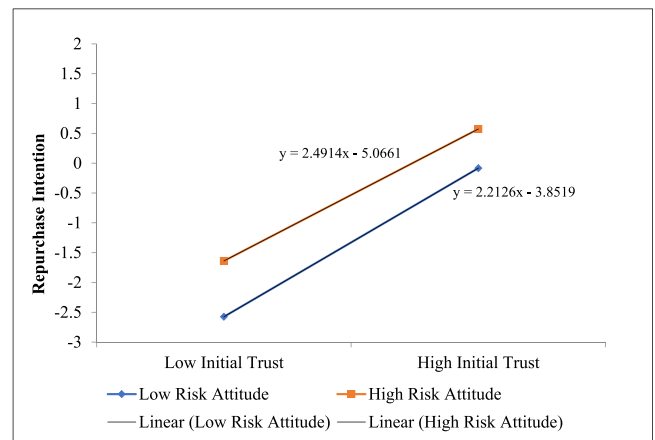


Fig. 2. Moderating effect of risk attitude.

significantly impact advocacy intention (interaction: $\beta = -0.05$, $p = 0.17$).

5. Study 2: Qualitative inquiry

The results of the quantitative study indicated no significant association between menu variety and initial trust. Additionally, environmental concern did not moderate the influence of initial trust on repurchase intention or advocacy intention, and risk attitude did not moderate the effect of initial trust on advocacy intention. Therefore, a qualitative study was performed to explore the plausible reasons behind these counterintuitive results. Furthermore, the qualitative study offers a nuanced understanding of initial trust for ghost kitchens.

5.1. Methods

Semi-structured interviews were conducted to gather additional qualitative information about customers' initial trust in ghost kitchens and find possible explanations for the survey results. The interview protocol (Table 5) was carefully developed based on the existing literature and the quantitative study results to align with the objectives of the present study (Chandra et al., 2022). An iterative process was followed when developing the interview protocol so that it was both comprehensive and tailored to the specific needs of the study objectives. This protocol consisted of two parts. The first included sample validity and warm-up questions about the ghost kitchen. The second part comprised questions about how the antecedents in the quantitative study influenced initial trust and the subsequent outcomes. A snowball sampling technique was used to recruit interviewees who had begun to order food from ghost kitchens in the past one month. The number of

Table 5
Interview protocol.

Interview questions	Purpose and rationale
When did you start ordering food from ghost kitchens?	This question is to confirm the validity that the sample aligns with the selection criteria of the most recent (past month) ghost kitchen customers.
What is the name of the ghost kitchen you most recently ordered food from in the past one month?	This question is an icebreaker to start the conversation.
Can you please describe your overall experience when ordering food from this ghost kitchen?	This question is a general question to start the conversation about customer needs for ordering food from the ghost kitchen.
Did you trust this ghost kitchen initially? What were the initial concerns you had when ordering food from this ghost kitchen? How did you choose this ghost kitchen and what factors influenced your decision to trust it for ordering food from the beginning?	This question is a general question to start the conversation about initial trust in the ghost kitchen.
Do you think (a) food safety, (b) economic value, (c) personalization, (d) multisensory experience, (e) food authenticity, and (f) menu variety influence your initial trust in this ghost kitchen? If so, can you explain why these elements are important to you in determining your initial trust in this ghost kitchen?	This question is in accordance with the survey findings and aims to validate the relationships between different antecedents and initial trust.
If the ghost kitchen has various types of food on the menu, would it influence your initial trust in the ghost kitchen? Why?	The purpose of this question is to explore the survey findings on the relationship between menu variety and initial trust.
Do you think menu variety is one of the factors determining your initial trust? Why?	
Do you think your initial trust in this ghost kitchen will influence your willingness to advocate for it? Why?	This question was designed to explore the survey findings on the relationship between initial trust and advocacy intention.
Do you think that your initial trust in this ghost kitchen affects your intention to repurchase from it in the future? Why?	This question was designed to explore the survey findings on the relationship between initial trust and repurchase intention.
To what extent do you care about environmental protection? How does your concern for the environment influence your initial trust and decision to reorder food from this ghost kitchen?	To explore the moderating effect.
How does your concern for the environment influence your initial trust and willingness to advocate for this ghost kitchen?	To explore the moderating effect.
What is your general attitude toward taking risks? How does this attitude influence your initial trust and decision to reorder food from this ghost kitchen?	To explore the moderating effect.
How does your attitude toward taking risks influence your initial trust and willingness to advocate for this ghost kitchen?	To explore the moderating effect.

interviews was decided based on the principle of data saturation (Francis et al., 2010). Since the last three interviews (i.e., S10, S11, and S12) did not contribute new information, 12 interviews were considered adequate for the current study (Jiang & Stylos, 2021).

The interviews were carried out online in February and March 2023. On average, each interview lasted between 30 and 40 minutes. Among the 12 interviewees, gender was evenly distributed. Most interviewees were aged between 19 and 29 years (66.67%). Eight interviewees were employees, and four were students. The nature and purpose of the interview were explained to each respondent to obtain their informed consent. We ensured that each respondent participated voluntarily and could withdraw from the interview at any time. All information was

collected in de-identified form, and each interview was audio-recorded with permission. All interviews were transcribed for further analysis. In line with the thematic analysis guidelines (Braun and Clarke, 2006) and the research purpose, two researchers analyzed all the transcripts independently. They coded the qualitative data according to the hypothesized relationships and kept an open mind to extract any surprising but significant outcome (Dey et al., 2022). The coding of each transcript was compared, and discrepancies between the two coders were discussed and resolved before the researchers agreed on the thematic codes. This consensus led to a final coding scheme, which provided the basis for assessing the interview data.

5.2. Results

5.2.1. Qualitative inferences: corroboration and confirmation

We developed qualitative inferences to further interpret the results from the quantitative research, which bridged quantitative and qualitative findings (Venkatesh et al., 2016). The qualitative results provided corroboration and confirmation of the supported hypotheses in the quantitative research.

The qualitative research confirmed the supported H₂ regarding the prominent role of food safety.

"When I ordered food from [ghost kitchen], my primary concern was whether there were any safety risks in the food. Food safety is important to me as it relates to my health. If I had seen online customer comments claiming that [ghost kitchen's] food is unsafe, I would definitely not trust it and would not order from it." (S2)

"As [ghost kitchen] does not have a physical storefront, food safety is definitely one of the first things to consider. My main consideration is whether the ingredients are fresh and whether the food preparation environment is clean. I observed the cooking environment and the tools and materials used through the pictures uploaded by the owner. As [ghost kitchen] looked clean and hygienic in the pictures, I felt that the food they made was relatively safe, and that increased my initial trust in it." (S8)

Interviewees also highlighted the significance of the economic value for initial trust, confirming H₃.

"The overall pricing of food from [ghost kitchen] is not too high. It is a little lower than the price of restaurant meals. This made me feel worthy of choosing it." (S7)

"Cost-effectiveness is what influenced my initial trust in [ghost kitchen]. We all know they do not have a dining area, nor do they have to provide dining services, so the total cost is lower than that of a restaurant. If the price is set excessively high, I will suspect it of being a dishonest merchant who defrauds customers." (S9)

As postulated in H₄, personalization was a key factor influencing customers' initial trust in the ghost kitchen.

"I was able to personalize the food from [ghost kitchen], which made me feel that the owner cares about consumers and our preferences." (S1)

"I feel [ghost kitchen] is professional and their chef can provide delicious food while adjusting the recipes to cater to the customer's needs. For example, [ghost kitchen] offers light meals and customizes high-protein or low-calorie food for me, which made me trust them from the very beginning." (S7)

The significance of food authenticity for initial trust was also emphasized by interviewees, confirming H₅.

"As I believed that [ghost kitchen's] chef had received professional culinary training in cooking genuine local food, I felt that [ghost kitchen] was trustworthy." (S1)

“If I found out through the online comments of other customers that [ghost kitchen] used unauthentic ingredients or cooking methods, I would not trust it at all because such a ghost kitchen is more likely to destroy and waste food.” (S10)

Additionally, interviewees underlined the importance of multisensory experience for building initial trust, supporting H₆.

“I reviewed other customers’ online comments and the photos they took, especially repeat customers’ reviews and photos. As most photos of food were glossy and enticing, and the customers often provided favorable feedback on the taste of the dishes, I placed an order immediately. These did improve my initial trust in [ghost kitchen].” (S4)

“Whether the food looks good, smells good, and tastes good is very important for me to trust [ghost kitchen] from the start. For me, the most important consideration when ordering food is whether it tastes good. The appearance of the food in the photograph attracted me. It looked delicious and made me believe that it would taste even better. I think an owner who is good at displaying food and taking photographs of food would have a superior aesthetic appreciation, making me trust him more.” (S10)

Consistent with H₇, initial trust in ghost kitchens emerged as a key predictor for customers’ advocacy intention.

“If I have a high level of initial trust in a ghost kitchen, I will share it with others and tell them that [ghost kitchen] is good. If I am suspicious of a ghost kitchen, I will advise others not to order food from it.” (S3)

“I recommended [ghost kitchen] from which I ordered food because I trusted it through the first ordering experience.” (S4)

The findings also confirmed H₈ that customers’ repurchase intention was influenced by their initial trust in the ghost kitchen.

“As I have a high level of initial trust in [ghost kitchen] and it met my expectations, I am going to repurchase food from it.” (S1)

“Initial trust is related to first impressions, and a good first impression will have a lasting effect on me. In the future, if I want to place an order from a ghost kitchen, I will choose the ghost kitchen in which I have more initial trust.” (S10)

Furthermore, the supported H₁₁ about the moderating effect of risk attitude on the relationship between initial trust and repurchase intention was confirmed through qualitative results.

“I am highly adventurous and open to trying almost anything. Once I have established initial trust in a ghost kitchen, I would be more willing to reorder from it and sample other dishes on its menu.” (S2)

“I am not fond of engaging in risky endeavors. Even if I have already established initial trust in [ghost kitchen], I still need to review a lot of customer feedback before I can believe this place is reliable and suitable for me. I need to find some confirming results. Otherwise, I will not easily repurchase from [ghost kitchen] as I am afraid of having a negative experience.” (S4)

In summary, the supported hypotheses in the quantitative study were validated and corroborated in the qualitative study. Additionally, the qualitative inquiry revealed the anecdotal mechanisms underlying the supported hypotheses. In the following section, the unsupported hypotheses are addressed through the development of meta-inferences.

5.2.2. Meta-inferences: complementarity

Mixed methods can not only confirm and corroborate the results of the quantitative study but also uncover valuable complementary perspectives that might be overlooked by a single quantitative study (Venkatesh et al., 2016). Therefore, the underlying reasons for the unsupported hypotheses were further explored by revisiting the interview transcripts. Meta-inferences were delineated to establish a consensus between the qualitative and quantitative findings and gain

complementary views about the research subject by situating the results from the qualitative inquiry within the findings gained from the quantitative survey (Chandra et al., 2022).

Almost all respondents indicated that menu variety was not related to their initial trust in the ghost kitchen.

“It doesn’t matter to me how diverse the menu is. It did not affect my initial trust in [ghost kitchen]. Because I place an order with a clear purpose, for example, grilled fish with green pepper, I order what I want directly. I don’t care about the variety of the dishes on the menu.” (S3)

“Menu variety did not affect my initial trust in [ghost kitchen]. Nowadays, many ghost kitchens specialize in one type of food, such as a ramen store. There are also ghost kitchens that offer many kinds of dishes, such as pizzerias that also offer fried chicken and burgers. This does not affect my initial trust in the ghost kitchen because I just search for what I want to eat and place an order to buy the specific type(s) of food.” (S4)

We dug deeper into the qualitative data to better understand why menu variety did not facilitate initial trust. Following the practice of the previous literature (Srivastava et al., 2018), qualitative findings supplemented the quantitatively validated theoretical model with complementary insights in the form of boundary conditions. Our investigation uncovered three critical boundary conditions upon which menu variety is contingent for building initial trust.

5.2.3. Boundary condition 1

The first boundary condition is the customer’s concern about the professionalism of the ghost kitchen.

“I think the ghost kitchens that sell relatively fewer categories of food are better because they are more professional with these kinds of dishes and hence more trustworthy.” (S3)

“The menu variety will not affect my initial trust in the ghost kitchen. What is more important to me is that they specialize in specific types of dishes. Extremely high diversity in the menu would make me think that the chef may not be professional in some dishes.” (S10)

5.2.4. Boundary condition 2

Concern about food quality is the second boundary condition that may restrain customers from building initial trust based on menu variety.

“I think the capacity of a ghost kitchen is limited, and the vendor may not be able to prepare and complete so many dishes in a short time. Therefore, if the menu is too diversified, the vendor may use processed food instead of fresh ingredients.” (S2)

“Too much diversity in the menu might reduce my initial trust in the ghost kitchen. I think a ghost kitchen should have its specialty. If it offers too many kinds of food, I will doubt whether it specializes in or is capable of preparing the dish I want to order well.” (S8)

5.2.5. Boundary condition 3

The third boundary condition that holds back menu variety from influencing initial trust is the customer’s need for convenience and efficiency.

“For me, ordering food from the ghost kitchen is all about convenience and efficiency. I am very clear about what I want to order from the ghost kitchen. Menu variety may be more necessary for an offline restaurant. However, for the ghost kitchen, it is not so much about the variety of the menu but all about convenience. So, I don’t think it’s necessary to improve menu variety.” (S5)

“A ghost kitchen should have a distinct market positioning and specialization. There is no need to have too many options. When I want to eat various types of food, I can easily order food from different ghost kitchens,

each of which specializes in a specific type of food, through the online platform. So, it is not necessary to find a ghost kitchen that serves various dishes.” (S8)

We also investigated the underlying reasons why environmental concern did not influence the effect of initial trust on repurchase intention or advocacy intention. Although the majority of interviewees had environmental concerns, they did not think about environmental issues when deciding whether to reorder food from ghost kitchens.

“I don’t think there is a relationship between my environmental concern and my decision to order or reorder food from the ghost kitchen. Although I think nature is relatively delicate and easily damaged, I do not consider this when ordering food from [ghost kitchen].” (S4)

“Environmental concerns do not influence my food-ordering decision. It does not affect my desire for food. I will protect the environment without affecting my normal life, such as by not using disposable chopsticks.” (S8)

Additionally, we explored the underlying reasons why risk attitude did not influence the impact of initial trust on advocacy intention. Respondents indicated that food is closely related to people’s health. When they decided whether to recommend the ghost kitchen, their risk attitude was irrelevant because they thought more about others’ health.

“My risk attitude is not relevant when it comes to recommending [ghost kitchen] to others. I would love to try everything, but others may not like that. Even if I have a high level of initial trust in [ghost kitchen], I would recommend it to others with caution because, after all, it involves food, and I have a responsibility for others’ health.” (S8)

6. Conclusion

6.1. General discussion

Although digital transformation offers new marketing opportunities, it also introduces challenges such as developing customer trust in the evolving and innovative business models. Our research builds on initial trust theory (McKnight et al., 1998) to examine the role of food-related and context-specific factors in influencing customers’ initial trust in ghost kitchens and their repurchase and recommendation intentions using the sequential mix-methods research approach.

Through quantitative research, we found that food safety (H₂), economic value (H₃), personalization (H₄), food authenticity (H₅), and multisensory experience (H₆) each positively influence customers’ initial trust in ghost kitchens. We also found that initial trust has a positive impact on advocacy intention (H₇) and recommendation intention (H₈). Additionally, initial trust was found to mediate the effects of food safety, economic value, personalization, multisensory experience, and food authenticity on repurchase and advocacy intentions. In terms of contextual factors, the results show that risk attitude interacts with initial trust: the higher the tendency to take risks, the stronger the relationship between initial trust and repurchase intention (H₁₁).

The qualitative inquiry assisted us to corroborate the quantitative research results and explore the plausible explanations for the unsupported hypotheses (H₁, H₉, H₁₀, H₁₂). Although menu variety was not significantly associated with initial trust in the quantitative model, the meta-inferences derived from the qualitative research enabled us to unearth three salient boundary conditions—customers’ concerns about food quality, professionalism of the ghost kitchen, and customer’s need for convenience and efficiency—that can potentially influence this relationship. Through meta-inferences, we also found that environmental concern did not influence the effect of initial trust on customers’ behavioral intentions because customers did not pay attention to environmental issues when ordering food from ghost kitchens. Furthermore, the reason why risk attitude did not affect the impact of initial trust on advocacy intention echoes the extant literature about the drivers of

WOM, which shows that the primary motive for positive WOM is self-enhancement (Alexandrov et al., 2013). Because customers make recommendations to seek positive evaluations from others (self-enhancement), they tend to think more about their responsibility for others’ health in recommending ghost kitchens, whereas risk attitude is less relevant.

6.2. Theoretical contributions

The current research makes theoretical contributions on several fronts. First, previous studies have shown that digital transformation enables hospitality businesses to drastically change how they operate and serve customers by leveraging digital technologies (Cheng et al., 2023; Jayawardena et al., 2023; Lam and Law, 2019). Whereas digital transformation promotes the emergence and growth of ghost kitchens, it simultaneously poses challenges regarding developing initial trust within digital-centric business models. Our study advances this stream of literature by specifically examining the dynamics of initial trust in this rapidly evolving restaurant model.

Second, the present study enriches the research on the ghost kitchen business model (Ashton et al., 2022; Rinaldi et al., 2022; Vu et al., 2023) by empirically examining what factors contribute to the development of initial trust. Unlike traditional restaurant settings, ghost kitchens operate without physical premises and direct human interaction, increasing the significance of understanding factors that determine initial trust. Our study offers critical insights for the strategic development of ghost kitchens, addressing a critical gap in how these emerging business models can foster customer trust and loyalty in a digital-centric restaurant landscape.

Third, the extant literature has mainly examined the impact of consumer-related factors on customer patronage of ghost kitchens (Cai et al., 2022; Leung et al., 2023; Pookulangara et al., 2022). A few studies have also shown that digital platform-related factors and marketing factors influence customer decision-making toward ghost kitchens (Hakim et al., 2022; Kulshreshtha and Sharma, 2022). Our study makes unique contributions to the literature by showing that food-related factors play a pivotal role as key determinants of initial trust in ghost kitchens. Our findings highlight food-related factors as primary touchpoints in the customer evaluation of ghost kitchens, advancing the academic understanding of customer decision-making in this new restaurant model.

Furthermore, our study offers original insights into the role that food-related factors play in determining initial trust in ghost kitchens. According to our study results, multisensory experience has the greatest impact on initial trust, followed by food authenticity, economic value, food safety, and personalization. More than 80% of the variance in initial trust was explained by the food-related factors, leading to repurchase and advocacy intentions. Our study is among the first empirical attempts to reveal that personalization, food authenticity, and multisensory experience are critical factors that affect customers’ initial trust in ghost kitchens. The findings contribute to the literature on trust in new digital businesses (Jensen and Wagner, 2018; Khoa et al., 2023; Palacios et al., 2021; Tussyadiah et al., 2020).

Our research also extends initial trust theory (McKnight et al., 1998) in the ghost kitchen context by demonstrating that initial trust is an important mechanism that transmits the impact of ghost kitchen stimuli to marketing outcomes and a critical predictor for customer behavior in the post-consumption stage. It also advances the body of knowledge on initial trust by integrating the customer’s risk attitude into the relationship between initial trust and repurchase intention toward ghost kitchens. Our finding suggests that when using initial trust to predict consumer behavior toward an emerging hospitality service, the customer’s risk attitude or tendency to avoid risks should be considered.

The meta-inferences derived from the qualitative research help us develop a nuanced understanding of unsupported relationships, informing future research on the topic. For instance, our research

findings suggest investigating the impact of menu variety on initial trust by considering the identified boundary conditions (customers' concerns about food quality, professionalism of the ghost kitchen, and customer's need for convenience and efficiency). The nonsignificant moderating impact of environmental concern revealed in our study aligns with [Loebnitz and Grunert \(2015\)](#) by showing that although some customers may have high environmental concerns, this does not affect their behavioral intentions toward the service provider. Considering that previous research has indicated that Generation Z customers care about the sustainability practices of ghost kitchens ([Kulshreshtha and Sharma, 2022](#)), future works can dig deeper into the impacts of environmental concern on ghost kitchen customer behavior among different customer segments (e.g., generational cohorts). [Table 6](#) summarizes the key contributions this study offers.

6.3. Practical implications

In addition to theoretical contributions, this study offers practical implications for ghost kitchen operators, the majority of whom are micro or small entrepreneurs ([Ashton et al., 2022](#)). First, it yields insights for ghost kitchen operators to encourage repurchase and advocacy intentions among customers by empirically demonstrating the necessity of overcoming their low initial trust in ghost kitchens. In terms of how to establish and enhance customers' initial trust in ghost kitchens, our findings suggest that operators should pay attention to food safety, economic value, personalization, food authenticity, and multisensory experience.

According to the study results, it is necessary to underscore the

economic value and highlight in marketing communications that the offerings are good value for money, which can help to enhance the marketing positioning that the ghost kitchen is an economical alternative to dining in restaurants. Because personalization is another important factor that generates initial trust in ghost kitchens, our findings demonstrate the need to focus on individual customers' food preferences and provide recommendations accordingly. Ghost kitchen operators are recommended to leverage data analytics and propensity modeling to predict individual customers' food options and provide customized service based on the customer's online food consumption history.

Additionally, our findings suggest that ghost kitchen operators should improve food authenticity and multisensory experience. Marketing communications are suggested to indicate locally sourced ingredients and special cooking methods as selling points for food authenticity. Since ghost kitchens have no dine-in space, the multisensory experience derived from food becomes more critical. Therefore, operators should enhance both flavor and presentation to demonstrate that their offerings look pleasant, smell good, and taste delicious. Moreover, they must ensure that the food is aesthetically appealing when displayed on the online menu and other marketing materials. Selecting trustworthy food delivery services is also imperative to ensure that the quality of food is not compromised in the delivery process. Apart from the food itself, ghost kitchen operators could enhance the aesthetic appeal of their offerings with attractively designed branding materials. They can also curate playlists and embed these in QR codes on the packaging or in the app to improve auditory enjoyment for customers. Furthermore, incorporating gamification activities and augmented

Table 6
Key contributions of the present study.

Theme	Authors	Key findings	The preset study contributions
Digital transformation	Cheng et al., (2023) ; Jayawardena et al., (2023) ; Lam and Law, (2019)	Digital transformation enables hospitality businesses to drastically change how they operate and serve customers by leveraging digital technologies.	Whereas digital transformation promotes the emergence and growth of ghost kitchens, it simultaneously poses challenges regarding developing initial trust within digital-centric business models. Our study advances this stream of literature by specifically examining the dynamics of initial trust in this rapidly evolving restaurant model.
Ghost kitchen business model	Ashton et al., (2022) ; Rinaldi et al., (2022) ; Vu et al., (2023)	Proposed a typology of ghost kitchens and captured the various sub-elements and potential stakeholders. The majority of dark kitchen renters are virtual kitchens offering fast food and desserts through online delivery platforms.	The present study enriches the ghost kitchen business model by empirically examining what factors contribute to the development of initial trust in ghost kitchens. Our study offers critical insights for the strategic development and success of ghost kitchens, addressing a critical gap in how these emerging business models can foster customer trust and loyalty in a digital-centric restaurant landscape.
Consumer decision-making in ghost kitchens	Cai et al., (2022) ; Hakim et al., (2022) ; Kulshreshtha and Sharma, 2022 ; Leung et al., (2023) ; Pookulangara et al. 2022	Mainly examined the role of consumer-related factors in exploring customer patronage of ghost kitchens. A few studies also showed that digital platform-related factors and marketing factors influence customer decision-making toward ghost kitchens.	Our study makes unique contributions to the existing literature by showing that food-related factors play a pivotal role as key determinants of initial trust in ghost kitchens. Unlike traditional restaurant settings, ghost kitchens operate without physical premises and direct human interaction, which increases the significance of understanding factors that determine initial trust. Our findings highlight the unique role of food-related factors as primary touchpoints in the customer evaluation of ghost kitchens. The study findings advance the academic understanding of customer decision-making in this new restaurant model.
Initial trust and trust in new and digital businesses	Jensen and Wagner (2018) ; Khoa et al., (2023) ; Palácios et al., (2021) ; Tussyadiah et al. (2020)	Trust plays a key role in customer decision-making in new or unfamiliar situations. Furthermore, trust is a continuous process and initial trust significantly influences future customer outcomes.	Our study offers original insights into the role food-related factors play in determining initial trust. The findings reveal that multisensory experience has the greatest impact on initial trust, followed by food authenticity, economic value, food safety, and personalization. In fact, we observed that more than 80% of variance in initial trust is explained by the food-related factors, which in turn, leads to repurchase and advocacy intentions. Furthermore, we found that environmental concern does not impact customer perception of initial trust. These findings provide a deeper understanding of customer behavior in the ghost kitchen context.

reality into ghost kitchen offerings can enhance interactivity and add personal touches.

Moreover, based on our qualitative study findings, ghost kitchen operators should demonstrate their professionalism in menu design and assure food quality in their marketing communications. In particular, they may consider simplifying the menu by focusing on a specific type of cuisine, a culinary niche, or a smaller selection of dishes in which they excel and can consistently maintain high quality. They should also provide convenience and efficiency for customers by, for example, reducing the wait time for food preparation and using flexible operating hours to accommodate customer needs beyond standard meal periods. Because we found that customers did not consider environmental issues when making consumption decisions regarding ghost kitchens, operators are advised to prioritize operational efficiency and cost reduction while complying with environmental regulations.

Notably, our results show the substantial impact of risk attitude in the relationship between initial trust and repurchase intention toward ghost kitchens. Given that initial trust had a greater positive effect on repurchase intentions for consumers with high-risk attitudes, ghost kitchen operators should consider means to reduce the customer's risk perceptions toward them. Because we found that food safety has a positive impact on initial trust, ghost kitchen operators and delivery service providers should adhere to hygiene regulations and guarantee the food served is fresh and safe.

In summary, for ghost kitchen operators, our study findings emphasize the importance of focusing on factors that build initial trust, such as ensuring food safety, highlighting economic value, and offering personalized experiences. Operators should invest in quality control, customer relationship management, and marketing communications that effectively convey these values to consumers. Investors in ghost kitchens should consider these aspects when evaluating their investment decisions. Our findings also suggest that ghost kitchens should prioritize customer-centric features such as multisensory experience and food authenticity to build a loyal customer base. This suggests that investors should not only consider operational efficiency but also factor in customer-centric approaches in their investment decision-making.

6.4. Limitations and future research directions

Despite the contributions of this research, it has several limitations, which suggest future research directions. First, we collected data from customers who had begun ordering food from ghost kitchens in the past month. Future studies could investigate whether antecedents of initial trust in ghost kitchens may differ between existing and prospective customers, as well as between first-time and repeat customers.

Since the present study was carried out among U.S. customers, future research could replicate this study in different geographical areas. Such replication will not only enhance the generalizability of the findings but also offer insights into how economic, cultural, and regulatory factors influence customer trust in ghost kitchens. Additionally, because the existing literature has suggested that meat-eaters might demonstrate different consumption behaviors from vegetarians (Bhattacharyya et al., 2023), it would be interesting to examine whether the construct relationships investigated in our study could be different between these two customer segments.

We found that food safety, economic value, personalization, food authenticity, and multisensory experience significantly influence initial trust in ghost kitchens. Given that customer evaluation of ghost kitchens is multifaceted, future research could expand the scope of this study to include technological factors such as user interface and app functionality, along with customer-related factors such as innovativeness and risk aversion in examining initial trust in ghost kitchens. Furthermore, research can employ the fuzzy-set qualitative comparative analysis (fsQCA) method to identify the causal configurations of factors that explain customers' perceptions and behaviors toward ghost kitchens.

Given the exploratory nature of the qualitative inquiry, we used a

snowball sampling method to recruit participants, which may introduce bias due to the potential homogeneity of the sample. Future studies are recommended to employ a more randomized sampling approach to gather data about ghost kitchens. Additionally, although initial trust has been found to be a noticeable predictor of customers' behavioral intentions in the ghost kitchen context, future research can consider other constructs, such as customer engagement and the customer's psychological ownership, in predicting consumption decisions. Furthermore, the current research did not consider specific ghost kitchen brands but investigated customers' perceptions and behavioral intentions toward the ghost kitchen business. Because ghost kitchen brand equity might affect customers' decision-making, future research could focus on specific brands and evaluate the impact of brand equity on initial and ongoing trust in ghost kitchens. Investigating how brand loyalty is developed in the ghost kitchen context through both initial and ongoing trust would also be fruitful.

CRediT authorship contribution statement

Yangyang Jiang: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **M S Balaji:** Conceptualization, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. **Cenhua Lyu:** Conceptualization, Data curation, Investigation, Visualization, Writing – original draft.

Declaration of Competing Interest

None.

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