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Hunger, Emotion, and App Design in Online Food Ordering: A Systematic Literature Review and the HEA framework

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Abstract

Purpose:

This review examines how hunger, emotion, and app design interact to shape consumer ordering behaviour within online food delivery service platforms (OFDS). Specifically, it investigates the physiological and affective states that drive impulsive ordering, emotional eating, and habitual platform engagement among consumers in digital food environments.

Design/methodology/approach:

A systematic literature review (SLR) synthesizing peer-reviewed studies published between 2014 and 2024 was conducted. Literature was drawn from consumer psychology, behavioural nutrition, and digital marketing using the SPIDER framework, PRISMA 2020 protocol, Rayyan screening, and CASP quality appraisal to identify key themes and frameworks relevant towards ordering through OFDS.

Findings:

Five dominant themes emerged from the synthesis: hunger and impulsivity as primary drivers of ordering decisions; emotional states including boredom, loneliness, and stress as activating conditions for emotional eating; app design as an active behavioural stimulus combining hedonic and utilitarian cues; theoretical frameworks as contextual lenses through which adoption, continuance, and satisfaction have been examined in prior OFDS research; and satisfaction, trust, and habit formation as underpinning mechanisms of reordering and loyalty. Collectively, the five themes reveal a recursive relationship between physiological hunger, emotional vulnerability, and platform design that the HEA Framework is proposed to articulate.

Originality/value:

This review makes an original theoretical contribution by proposing the HEA Framework; an integrative model positioning Hunger, Emotion, and App Design as three interdependent drivers of ordering behaviour in OFDS contexts. Unlike prior frameworks that treat these constructs in isolation, the HEA Framework establishes their recursive relationship and provides a structured foundation for future empirical investigation. The review further identifies five specific directions for future research anchored to the HEA Framework, and offers practical implications for platform designers, public health practitioners, and policymakers concerned with the responsible governance of digital food consumption.

Keywords: Online food ordering, consumer behavior, emotional eating, hedonic hunger, impulsivity, HEA framework, systematic literature review, app design

Introduction

The integration of digital technologies has changed how consumers purchase food. This is primarily driven by exponential growth of online food delivery services (OFDS). These platforms have made ordering food quicker and easier, replacing traditional dining (Gupta et al., 2024; Jabbour Al Maalouf et al., 2025). They provide seamless and effective transactions that complement hectic urban lifestyles by connecting users to delivery services and food providers (Duthie et al., 2023).

Initial studies related to OFDS have mainly focused on operational aspects to understand what drives consumer satisfaction and continued usage. Hence, variables, such as delivery efficiency, service quality, hygiene, and application usability, have been explored (Maimaiti et al., 2018; Yeo et al., 2017). However, recent studies have

shifted attention to behavioral factors, such as user trust, convenience, and perceptions of platform features, which affect consumer choices in OFDS (Alalwan, 2020; Cho et al., 2019).

Additionally, factors such as online reviews, ratings, personal recommendations, and previous experience with digital platforms greatly influence how people view and choose OFDS. Hence, as research progresses, it is important to look beyond practical features and consider internal factors, such as people's emotions and psychological states, which influence their food ordering choices in digital environments. This study presents a systematic literature review (SLR) that synthesizes peer-reviewed academic studies published between 2014 and 2024. This study examines the extent to which emotional and physiological factors, particularly hunger, mood, and impulsivity, affect food choices and purchasing behavior within OFDS contexts. Drawing from the interdisciplinary literature on consumer psychology, digital marketing, and behavioral nutrition, this review identifies dominant themes, theoretical frameworks, and key research gaps to inform future empirical and conceptual work in the field.

Rise of OFDS

Before the 1990s, dining out was primarily viewed as special treatment rather than a part of daily life. Most people preferred home-cooked meals, and à la carte restaurants were considered expensive and time-consuming (Saad, 2020). However, with the rise OFD platforms, eating habits have undergone significant changes, especially in urban areas, where speed and convenience have become more important than tradition. OFD services generally fall into two categories: (1) restaurants that manage their own delivery operations (e.g., McDonald's, Domino's, and Pizza Hut) and (2) third-party platforms that connect multiple restaurants, such as Uber Eats, Foodpanda and GrubHub (Yeo *et al.,* 2017). These platforms have made it easier for consumers to quickly access a variety of food options through mobile apps, leading to rapid industrial growth and changing customer expectations (Saad, 2020).

Recent years have witnessed a sharp increase in reliance on food prepared outside the home. In countries such as Australia, the United States, and the United Kingdom, more than one-third of the population consumes at least one externally prepared meal per week (Gupta *et al.,* 2024). While these meals were once obtained in person or by phone, the growing demand for convenience has fueled the rapid rise in OFDS (Bates *et al.,* 2023).

The coronavirus disease (COVID-19) pandemic has significantly accelerated this shift. Lockdowns and restrictions on dining out have pushed consumers toward app-based food ordering, highlighting the value of OFDS in providing quick and contactless access to ready-to-eat meals (Shah *et al.,* 2022). Using these platforms, users can conveniently browse menus, place orders, and track their deliveries within an interface linking numerous restaurants for easy access and choice (Pigatto et al., 2017). Many restaurants have integrated delivery technologies into their operations, enabling them to efficiently serve both dine-in customers and those ordering remotely (Sarkar and Dey, 2023).

The flexibility and scalability of online food delivery platforms allow them to operate around the clock, helping them reach more customers. This growth is driven by factors such as widespread internet access, easy-to-use apps, and lifestyle changes that prioritize speed and convenience (Gupta et al., 2024). Consequently, the global online food delivery market is projected to grow annually by approximately 10.5% between 2023 and 2032 (Jabbour Al Maalouf et al., 2025). Large acquisitions, such as Just Eat Takeaway's $7.3 billion purchase of Grubhub and DoorDash's $8.1 billion acquisition of Wolt, demonstrate strong investor confidence in this rapidly expanding industry (Taheri et al., 2025).

Both practical and psychological factors influence consumer behavior. Time-saving, ease of ordering, fast delivery, and app reliability are key motivators (Pillai et al., 2022; Yeo et al., 2017). However, emotional states and internal drivers play critical roles in shaping food choices.

Modern digital environments with highly appealing high-calorie food options can promote unhealthy eating habits. These settings often lead to external eating (Cortese *et al*., 2013; Davis *et al.,* 2007). OFDS enhance these cues with attractive images, vibrant colors, and engaging layouts designed to keep users engaged and encourage impulse purchase behaviors (Kapoor and Vij, 2018). Promotions and rewards further increase the appeal, making it easier for consumers to repeatedly engage with these platforms (Pillai *et al.,* 2022). This can result in hedonic hunger, in which people eat for pleasure, even in the absence of physical hunger (Lowe and Butryn, 2007). Over time, frequent exposure to hyperpalatable foods may increase cravings and reduce self-control, potentially

contributing to patterns of binge eating (Espel-Huynh *et al.,* 2018; Morales and Berridge, 2020). In severe cases, people may feel that they have no control over their eating. This feeling is a key sign of eating disorders, such as binge-eating disorders and bulimia, in which a person struggles with unhealthy eating habits and emotional stress when it comes to food (Elran-Barak *et al.,* 2015; Tanofsky-Kraff *et al.,* 2011).

Although the OFDS has obvious advantages such as speed, convenience, and variety, it also interacts with more profound psychological and emotional factors that affect customer behavior. As digital food environments continue to develop and become integrated into daily life, it is imperative to understand their influence.

Relevance of Hunger and Emotions in Food Choices

The primary goal of eating is homeostatic regulation, the process by which the body meets its nutritional and energy needs. Emotions and psychological states strongly affect what and how people eat. Stress and feelings, such as sadness or anxiety, often lead to eating more, especially taste-but unhealthy foods that are high in fat, sugar, or salt. This connection is part of how emotions drive people to eat for comfort or reward rather than hunger, sometimes leading to overeating (Gross, 2024; Hill et al., 2022). According to Frayn et al. (2018), emotional eating (EE) is often linked to weight gain and health issues, such as diabetes, heart disease, and obesity. It refers to eating in response to feelings rather than actual hunger, a behavior known as emotional overeating (Bernabéu-Brotóns and Marchena-Giráldez, 2022). Evers et al. (2018) explained that EE often occurs as a way to cope with difficult feelings, such as stress, anxiety, or sadness.

Moods and emotions can influence what people eat, both consciously and unconsciously. Individuals often select food based on taste preferences, social settings, and emotional comfort. Nutrients in food can affect the brain chemistry, which can improve mood and promote relaxation (Gibson, 2006). In addition, the environment in which people eat shapes how much they enjoy their meals. These surroundings significantly impact the overall eating experience and satisfaction (De Wijk et al., 2019).

A significant gap in the current literature is the lack of integration between psychological factors such as hunger and emotion-driven behaviors and the specific patterns of customer behavior observed in OFDS. Most research on OFDS focuses on operational aspects such as logistics, technology, and marketing, and often overlooks how immediate physiological needs and emotional states influence consumers' food choices in digital settings.

This gap highlights the need for a thorough review that combines insights from different fields, examining not only how hunger and emotions influence consumer behavior but also why findings vary across different contexts and research methods. Conducting an SLR is essential to bridge this gap by offering a critical assessment of existing studies and identifying new research opportunities. By explicitly mapping the interaction among hunger, emotion, and OFDS consumer behavior, an SLR can offer an integrated framework with greater explanatory power, addressing both the inconsistencies in prior findings and need for context-specific insights into modern food-purchasing behaviors.

Research Objectives and Questions

The primary aim of this SLR is to explore how hunger and emotional states such as stress, boredom, and mood shape consumer behavior in the context of OFDS. With the world becoming more dependent on digital food platforms, it is crucial to examine the psychological and situational factors that shape consumer behavior in this space. This review pinpoints and critically assesses the existing research on this topic, shedding light on important trends, gaps, and theoretical foundations found in the literature. To address this aim, the following research questions guide this review:

1. How does hunger influence food choices ordered via OFDS?

2. What emotional states are linked to impulsive or unhealthy food choices in OFDS?

3. What theoretical frameworks are used to explain emotional- or hunger-based consumer decision-making in digital food delivery?

By addressing these questions, this review deepens our understanding of consumer psychology in the context of digital food consumption and lays the groundwork for future research, targeted public health strategies, and development of more responsible and user-centered platform designs.

In doing so, this review proposes the HEA Framework — an original integrative model organizing the synthesized evidence around three constructs: Hunger, encompassing both homeostatic need and hedonic desire; Emotion, capturing the affective states that activate and amplify ordering impulses; and App Design, reconceptualized as an active behavioural stimulus rather than a passive usability feature. The HEA Framework is presented not as a replacement for prior theoretical models in the OFDS literature, but as a complementary lens that directs attention toward the internal lived physiological and affective states of the orderer states that existing frameworks have systematically underrepresented.

Methodology

An SLR was adopted to ensure a comprehensive, transparent, and replicable approach for identifying, selecting, and synthesizing relevant empirical studies. This approach brings together scattered information, defines clear concepts, and identifies gaps in research across multiple fields (Carrera-Rivera et al., 2022). An SLR is well suited to this study, which investigates how hunger and emotional states influence consumer behavior in OFDS. As relevant research spans digital consumption, marketing, and behavioral science, conducting an SLR organizes key findings and builds theoretical clarity. Focusing on empirical studies conducted from 2014 to 2024, this review compiles evidence on how psychological factors such as stress, boredom, and mood swings affect impulsive buying and food selection in online environments. Distinctively, this review adopts an orderer-centric perspective examining OFDS consumer behaviour from the inside out, foregrounding the lived physiological and affective states of the individual placing the order, rather than the platform or service characteristics that have dominated prior research. This orientation, absent from existing OFDS literature, positions the orderer not the platform as the primary unit of analytical attention, and forms the conceptual foundation from which the HEA Framework is derived.

A preliminary scoping search was conducted before the main review to evaluate the quantity and quality of the existing literature (Carrera-Rivera et al., 2022). This initial step refined the research focus and confirmed that the topic was sufficiently specific for a systematic analysis. The insights gained during this phase led to the exclusion of studies centered solely on physical restaurant dining or logistical aspects, thereby narrowing the review's scope to consumer decision-making on OFDS platforms.

The sample, phenomenon of interest, design, evaluation, research type (SPIDER) framework was used to capture the nuanced psychological and behavioral aspects of decision-making in the OFDS, particularly under conditions of hunger or emotional influence. Unlike the traditional PICO model, SPIDER is better suited for qualitative and mixed-methods research, allowing for a broader yet focused inclusion of studies.

Ultimately, the use of a systematic review methodology provides a solid foundation for understanding consumer behavior regarding online food delivery and supports the identification of underexplored areas for future empirical investigation.

The search strategy was developed using the SPIDER tool, which structured the review focus as follows refer Table 1.

Table 1: SPIDER Tool

SPIDER Element	Description
S (Sample)	Users or consumers engaging with online food delivery platforms (e.g., apps like Zomato, Uber Eats, Swiggy)
PI (Phenomenon of Interest)	Internal states such as hunger, appetite, emotional conditions (e.g., mood, stress, boredom)
D (Design)	Qualitative, quantitative, and mixed-method empirical research

E (Evaluation)	Observed behaviors including food choice, impulse buying, quantity ordered, and nutritional quality
R (Research Type)	Peer-reviewed empirical studies published in academic journals

A comprehensive search was conducted across ABDC-ranked (A/A*) journals available in academic databases such as ProQuest, Emerald, EBSCOhost, and Google Scholar. The following Boolean string was used:

("online food delivery" OR "food delivery apps" OR "e-food ordering") AND

(hunger OR appetite OR "physiological hunger" OR "psychological hunger" OR

"emotional state" OR stress OR mood OR boredom OR distressed OR upset OR guilty OR scared OR nervous OR irritable OR ashamed OR

"Power of Food Scale" OR "Three-Factor Eating Questionnaire" OR "State hunger scale" OR "Trait hunger scale" OR "Visual Analog Scale" OR "hedonic hunger" OR "homeostatic hunger") AND

("consumer behavior" OR decision-making OR "food choice" OR "impulse buying")

To maintain relevance and academic rigor, the search was restricted to peer-reviewed journal articles within the subject areas of Business, Management, and Social Sciences. Studies were further screened to include only those published in English (UK or US) and within the time frame of 2014 to 2024. Grey literature such as conference papers, dissertations, book chapters, and editorial notes was excluded from this review. Refer Table 2 for complete criterion.

Table 2: Inclusion and Exclusion Criterion for Systematic Literature Review

Criteria	**Included**	**Excluded**
Population	Consumers who use online food delivery platforms	Studies focusing solely on in-store or dine-in restaurant behavior
Focus Area	Hunger, appetite, emotional states (e.g., stress, mood, boredom) and their influence on food choices or purchasing behavior	Studies focusing only on service quality, logistics, delivery operations, rider experience, or technological infrastructure
Study Type	Empirical studies (qualitative, quantitative, or mixed methods)	Editorials, commentaries, opinion pieces, and systematic reviews
Time Frame	Studies published between 2014 and 2024	Studies published before 2014, unless considered foundational or highly cited

The PRISMA flow diagram as indicated in Figure 1was used to illustrate the study selection process, including the number of records identified, screened, included, and excluded, along with justifications. Initially, 1,329 records were identified through database searches, including 496 from ProQuest, 555 from Emerald Insight, 128 from EBSCOhost, and approximately 150 from the first 15 pages of Google Scholar. An additional 24 records were identified through citation chaining and reference list reviews, resulting in 1,353 records. After removing 279 duplicate records, 1,074 unique articles were screened. The titles and abstracts of these articles were reviewed and 861 articles that did not meet the inclusion criteria were excluded. The remaining 213 full-text articles were then assessed for eligibility. Among them, 42 were excluded for not focusing on OFD or hunger/emotions, 32 were not empirical studies, 24 were unrelated to consumer behavior, and 18 were excluded because of poor methodological quality, leaving 97 high-quality studies included in the final qualitative synthesis.

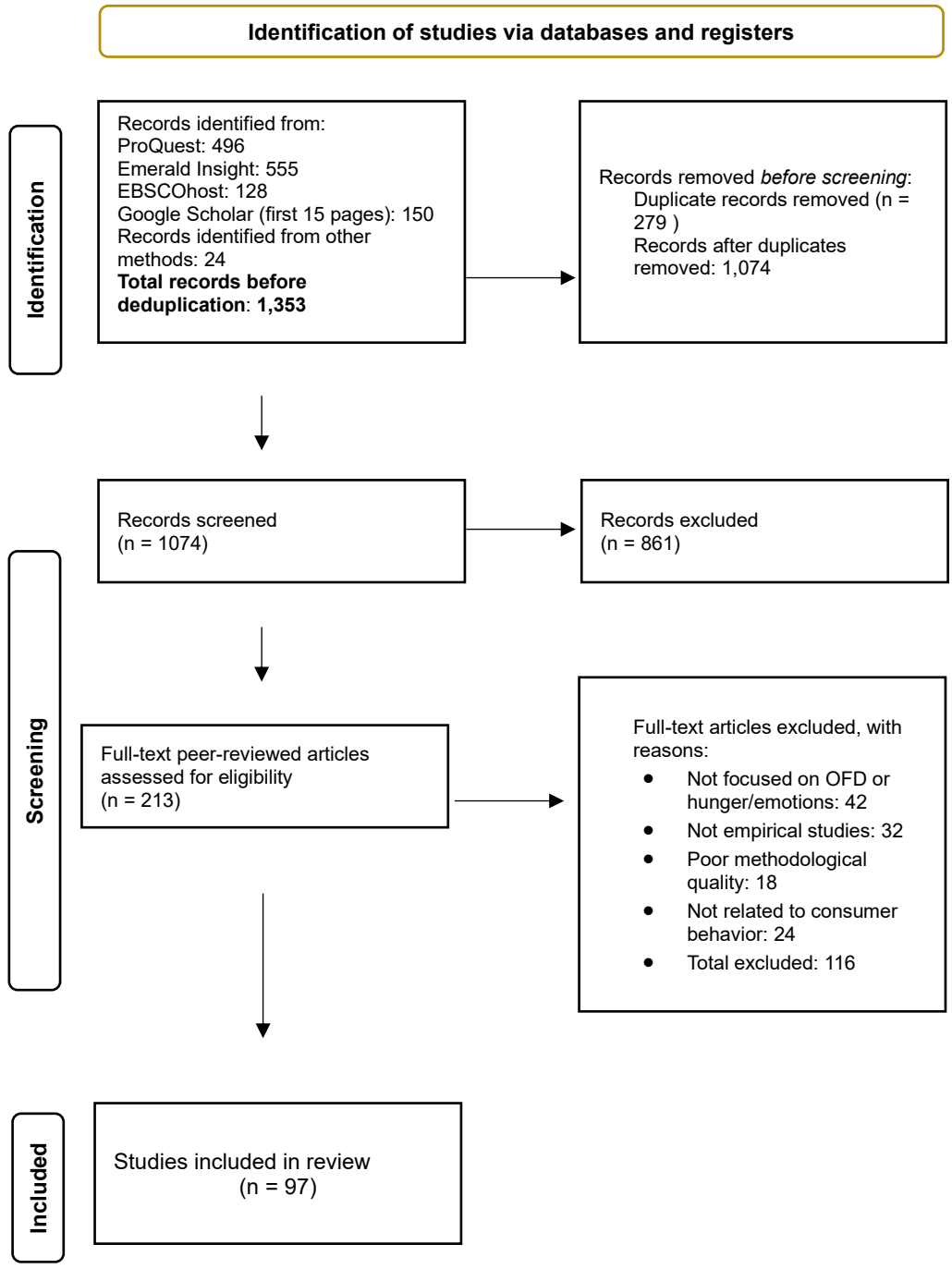

Figure 1: PRISMA Flow Diagram

Annexure 1 presents the key identified characteristics of the 97 included studies, detailing the author, year, theme, methodology and key findings.

Annexure 1: Table of Included OFD Studies

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
1	Kumar & Shah, 2021	Hunger and Impulsivity App Design as Behavioral Stimuli	Survey	App aesthetics significantly influence users' emotions—pleasure, arousal, and dominance—with pleasure being the strongest predictor of continued usage. Arousal mediates the effect of

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				pleasure on continued intention to use food delivery apps.
2	Portingale et al., 2023	Emotional Triggers and Food Preferences	Survey	FDA use is associated with greater urges to overeat; loneliness and negative mood increase body dissatisfaction and disordered eating urges. These emotional states elevate risk related to eating disorders among FDA users.
3	Elran-Barak et al., 2015	Hunger and Impulsivity	Survey	Adults with anorexia nervosa (binge/purge type) and bulimia nervosa restrict their eating more than those with binge eating disorder. Eating fewer meals leads to more binge eating, but eating small, low-calorie meals in bulimia nervosa leads to less binge eating.
4	van Dillen & Andrade, 2016	Hunger and Impulsivity	Experimental	Participants who are more sensitive to food cues pay more attention to and crave high-calorie foods, and they are more likely to pick unhealthy snacks. But when their minds are distracted, these cravings and choices lessen, showing that controlling thinking can help manage impulsive eating.
5	Crane et al., 2023	Hunger and Impulsivity	Longitudinal	Participants who reduced their pleasure-driven desire to eat (hedonic hunger) during a weight loss program lost more weight at 12 months, but this was closely linked with cutting down on cravings and uncontrolled eating. After 24 months, cutting cravings was the best predictor of weight loss, while changes to the home food environment didn't seem to affect weight loss.
6	Bénard et al., 2019	Hunger and Impulsivity	Cross-sectional	Higher impulsivity leads to more unhealthy eating, frequent snacking, and a greater risk of bulimic and binge eating disorders. It is key in disordered eating.
7	VanderBroek-Stice et al., 2017	Hunger and Impulsivity	Cross-sectional	Food addiction happens more often in obese people and is more closely linked to impulsive behavior than obesity itself. Acting impulsively during strong emotions and preferring immediate rewards are connected to food addiction. Food addiction helps explain how these impulsive traits lead to obesity.
8	Maccarrone-Eaglen & Schofield, 2017	Hunger and Impulsivity	Survey	Compulsive buying behavior stems from both compulsivity and impaired self-control, aligning it with behavioral addiction.
9	Pradhan et al., 2018	Hunger and Impulsivity	Survey	Materialism drives credit card use and impulsive buying, which in turn lead to compulsive buying, with impulsive buying acting as a key mediator.
10	Darrat, Darrat & Amyx, 2016	Hunger and Impulsivity	Survey	Impulse buying increases consumer anxiety, which can lead to compulsive buying, though escapism may weaken this link.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
11	Zheng et al., 2020	Hunger and Impulsivity	Survey	Perceived stress increases online compulsive buying in women, partly through negative coping, but this effect is weaker in those with higher self-esteem.
12	Kukar-Kinney et al., 2016	Hunger and Impulsivity	Survey	Compulsive buyers are more likely to overspend on daily deal sites because they are influenced by fun and social pressure cues.
13	Saintives, 2020	Emotional Triggers and Food Preferences	Experimental	Buying online or in-store can make consumers feel guilty in different ways. How much value they feel they get changes how guilty they feel, and this guilt then affects how satisfied they expect to be with their purchase.
14	Matz & Harari, 2021	Emotional Triggers and Food Preferences	2 exploratory and 1 confirmatory	People's personality traits influence how they spend time daily which affects how people feel and behave in the moment and over time.
15	Dantec et al., 2021	Emotional Triggers and Food Preferences	Experimental data	Food triggers strong emotions through the combined work of our senses, especially taste. This multisensory experience is also shaped by our thoughts and surroundings. Understanding food emotions requires looking at both sensory and cognitive factors.
16	Cancellieri et al., 2022	Emotional Triggers and Food Preferences	Survey	Food reputation strongly predicts willingness to eat, with emotions and preference as mediators. Cognitive factors outweigh emotional ones, especially for disliked foods.
17	Braden et al., 2018	Emotional Triggers and Food Preferences	Survey	Eating in response to depression, anxiety, and boredom is linked to poor psychological well-being, disordered eating, and emotion regulation issues; eating due to positive emotions showed no such links.
18	Chawner & Filippetti, 2024	Emotional Triggers and Food Preferences	Conceptual Model	Emotional eating starts early and comes from a mix of child traits (like temperament and feeling hunger) and how parents feed and respond. Kids learn to eat for emotions through parents' actions, and it depends on their ability to manage feelings and hunger.
19	Messerli-Bürgy et al., 2018	Emotional Triggers and Food Preferences	Cross-sectional	In preschool children, emotional eating mainly involves undereating and is linked to negative emotionality (temperament), but not to stress biomarkers or parenting. This suggests that difficult temperament may increase risk for emotional eating and later eating or weight issues.
20	Zhang et al., 2022	Emotional Triggers and Food Preferences	Cross-sectional	Higher frequency of online takeaway food consumption (4-7 days/week) among college students was significantly associated with increased emotional overeating scores, independent of personal emotional status and other risk factors.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
21	Xu et al., 2019	Emotional Triggers and Food Preferences	Cross-sectional	Healthy eating patterns linked to lower psychological symptom risk. Fast food, sugar-sweetened beverage, and meat patterns linked to higher psychological symptom risk.
22	Ackermans et al., 2021	Emotional Triggers and Food Preferences	Experimental	Hunger in healthy-weight women increased negative emotions (tension, anger, fatigue, confusion) and decreased positive emotions (vigour, esteem-related affect). Eating disorder symptoms affected esteem-related affect when satiated, but not when hungry.
23	Crockett, Myhre & Rokke, 2015	Emotional Triggers and Food Preferences	Survey	People who get bored easily or have trouble managing their emotions are more likely to eat when they feel bored or upset. These habits could put them at risk for unhealthy weight gain.
24	Klatzkin, Nolan & Kissileff, 2021	Emotional Triggers and Food Preferences	Experimental	Emotional eaters consumed more food after stress only if they showed high stress reactivity and felt emotional relief from eating. Stress promotes snack intake mainly in women with higher emotional eating tendencies.
25	Ackermans, Jonker & De Jong, 2023	Emotional Triggers and Food Preferences	Experimental	Adaptive cognitive emotion regulation linked to lower calorie intake after hunger-induced negative emotions; maladaptive behavioral regulation linked to lower intake, while adaptive behavioral regulation linked to higher intake in fasted women.
26	Abramson & Stinson, 1977	Emotional Triggers and Food Preferences	Experimental	Obese individuals ate more food than non-obese individuals. Boredom increased food consumption for both groups.
27	Jackson et al., 2021	Emotional Triggers and Food Preferences	Survey	Increased boredom and eating due to boredom during COVID-19 pandemic linked to more snacking and lower intuitive eating; no difference in overall diet quality across groups.
28	Saine & Zhao, 2021	Emotional Triggers and Food Preferences	Experimental	Emotional and social loneliness affect food attitudes and consumption differently; self-regulation mediates the preference for unhealthy food.
29	Henriksen et al., 2014	Emotional Triggers and Food Preferences	Cross-sectional	People who feel lonely tend to drink more sugary beverages. Those with close relationships and good social connections drink fewer sugary drinks. Being socially isolated may lead to eating more sugar.
30	Tomova et al., 2020	Emotional Triggers and Food Preferences	Experimental	After being alone for a while, people feel lonely and want social contact, just like how they feel hungry after not eating. The brain shows stronger responses to what they need most—either social interaction or food.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
31	Naeem, 2020	Emotional Triggers and Food Preferences	Interviews	Fear of illness, shortages, and social pressure, along with misinformation and stay-at-home advice, significantly increased impulsive buying during COVID-19.
32	Laato et al., 2020	Emotional Triggers and Food Preferences	Survey	Exposure to online information during COVID-19 led to information overload and cyberchondria, which influenced perceived severity and, in turn, drove unusual purchases and voluntary self-isolation.
33	Mehrolia, Alagarsamy & Solaikutty, 2020	Emotional Triggers and Food Preferences	Survey	During COVID-19, people who felt more at risk and saw fewer benefits were less likely to use food delivery apps. Frequent users before lockdown kept using them.
34	Gordon-Wilson, 2020	Emotional Triggers and Food Preferences	Qualitative	During COVID-19, British consumers showed more control in shopping but less in snacking and alcohol use, affecting overall buying behavior.
35	Moore & Konrath, 2015	Emotional Triggers and Food Preferences	Experimental	People who feel emotions more strongly are more likely to crave food when they see food ads, especially if the ads are vivid or if they are dieting. Their cravings are influenced by emotional memories, self-control, and how much pleasure they expect from the food.
36	Gardner et al., 2014	Emotional Triggers and Food Preferences	Experimental	Positive moods lead people to choose healthy foods by focusing on long-term benefits; negative moods make people prefer indulgent foods for immediate mood relief.
37	Lancellotti & Thomas, 2018	Emotional Triggers and Food Preferences	Experimental	"Guilty pleasure" ads make women more likely to like and buy a product, but have the opposite effect on men. This happens because women and men imagine the ads differently and feel different levels of control when viewing them.
38	Zenk et al., 2014	Emotional Triggers and Food Preferences	Survey	Participants ate more snacks when food was easy to get and when they had more daily stresses. The more stress they had, the more they snacked, especially if snacks were easy to find. Their mood or confidence didn't change how much they ate later in the day.
39	Rising & Bol, 2016	Emotional Triggers and Food Preferences	Experimental	Calorie labels helped emerging adults with high self-control choose lower calorie foods; no effect on those with low self-control or on beverage choices.
40	VanderBroek-Stice et al., 2017	Emotional Triggers and Food Preferences	Cross-sectional	The study found that people with impulsive traits are more likely to show signs of food addiction.
41	Garza et al., 2016	Emotional Triggers and Food Preferences	Cross-sectional	Higher impulsivity was linked to more frequent fast-food consumption. Convenience and

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				socializing were common reasons for fast-food eating.
42	Zheng et al., 2019	Emotional Triggers and Food Preferences	Survey	In mobile commerce, portability, visual appeal, and interpersonal influence drive hedonic browsing, which directly increases impulse buying; utilitarian browsing affects impulse buying indirectly via hedonic browsing.
43	Fakih et al., 2016	App Design as Behavioral Stimuli	Survey	Menu information influences consumer attitudes, which mediate behavioral intentions. Preparation and ingredients and nutritional info are key for high- and mid-scale restaurants; product characteristics matter most for low-scale restaurants.
44	Magnini & Kim, 2016	App Design as Behavioral Stimuli	Experimental	The study found that fancy fonts and heavier menus make people think a restaurant is more upscale and offers better service. Menu color didn't make a difference in how the restaurant was perceived.
45	Hou, Yang & Sun, 2017	App Design as Behavioral Stimuli	Experimental	Pictures on menus positively influence consumer attitudes, willingness to pay, and purchase intentions for dishes with common descriptive names. For ambiguous dish names, pictures only have a positive effect on verbalizers, while visualizers respond less favorably to pictures paired with ambiguous names.
46	Cai & Chi, 2021	App Design as Behavioral Stimuli	Experimental	Pictures on menus affect what customers expect and feel; strong branding helps keep trust even if expectations aren't met; some customers get less satisfied when their expectations are strongly unmet.
47	Lee & Kim, 2020	App Design as Behavioral Stimuli	Experimental	Mental imagery generated by video menus strongly drives desire to eat. Using videos in electronic menus is more effective than static pictures for stimulating appetite and improving the ordering experience.
48	Brewer & Sebby, 2021	App Design as Behavioral Stimuli	Survey	Menu visual appeal, informativeness, and COVID-19 risk perception influence online food purchase intentions through food desire and perceived convenience.
49	Xu & Huang, 2019	App Design as Behavioral Stimuli	Experimental	Diners process restaurant info cues via different routes (central or peripheral) depending on cognitive engagement (need for cognition), affecting their expectations and thus ordering behavior on online-to-offline apps.
50	Li et al., 2020	App Design as Behavioral Stimuli	Mixed-methods	Consumers choose different online sources based on what they're buying: for fun or luxury items (hedonic), they often check social media and product pages early; for practical items

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				(utilitarian), they rely more on reviews, search engines, and deals closer to the time of purchase.
51	Roggeveen et al., 2015	App Design as Behavioral Stimuli	Multiple studies comparison	Showing products through videos rather than pictures makes customers more interested and willing to pay more for fun, pleasurable (hedonic) items. This effect is strong across different product types and influences future choices.
52	Wang et al., 2022	App Design as Behavioral Stimuli	Experimental	Livestreaming boosts purchase intentions for hedonic products by enhancing mental imagery and trust, but has no significant effect on utilitarian products
53	Zhang, Xiao & Nicholson, 2020	App Design as Behavioral Stimuli	Experimental	Moving product images in ads pull attention away from backgrounds. For fun (hedonic) products, ads work best when slogans and backgrounds match if the product is still, but mismatched slogans work better if the product moves. For practical (utilitarian) products, dynamic moving images with mismatched slogans boost buying intent.
54	Pillai et al., 2022	App Design as Behavioral Stimuli	Survey	Online persuasion routes significantly shape consumer attitudes and purchase intentions in online food delivery
55	Gunden, Morosan, & DeFranco, 2020	App Design as Behavioral Stimuli	Survey	The study found that people who focus on saving money browse food delivery apps in both practical (utilitarian) and fun (hedonic) ways. However, only browsing for fun and social influences actually persuade them to buy. Browsing just for practical reasons does not lead to persuasion.
56	Chang et al., 2014	App Design as Behavioral Stimuli Use of Psychological/Behavioral Frameworks	survey	Attractive website design affects shoppers' emotions (pleasure, arousal, dominance), which in turn influence their likelihood to buy. Feeling in control and emotional arousal increase pleasure, making purchases more likely.
57	Loureiro, Bilro & Japutra, 2020	App Design as Behavioral Stimuli	Survey and text-mining technique	Content created by consumers online makes people feel emotions like pleasure and excitement, which helps them connect more deeply with brands. Thinking about the brand (cognitive processing) is key to positive engagement.
58	Kapoor & Vij, 2018	App Design as Behavioral Stimuli	Mix method design	Mobile app features like visual appeal, navigation ease, information quality, and collaborative tools significantly influence users' trust and food ordering decisions.
59	Atulkar & Singh, 2021	App Design as Behavioral Stimuli	Survey	Customer conversion to food ordering apps is positively influenced by ease of use, usefulness, incentives, information, CRM, and order management; price and visual design had no significant effect.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
60	Papies et al., 2020	App Design as Behavioral Stimuli	Behavioral, physiological, and neuroimaging methods	Seeing or thinking about food triggers mental images of eating that create cravings and enjoyment. These cravings can be lessened by distracting the mind or practicing mindfulness.
61	Le et al., 2023	App Design as Behavioral Stimuli	Quantitative	Attractive and informative online menus make customers want the food more, and this desire plus how convenient ordering is leads to higher purchase intention.
62	Prabhu & Soodan, 2020	App Design as Behavioral Stimuli	Survey	The well-designed mobile apps can effectively support and influence consumer decisions, especially in the context of online food ordering among students.
63	Pigatto et al., 2017	App Design as Behavioral Stimuli	Qualitative exploratory study	Most Brazilian online food delivery companies focused on content, then functionality, and lastly usability.
64	Pitchay et al., 2022	App Design as Behavioral Stimuli	Survey	People's attitude toward using food delivery apps improves when they see social approval, good information, and savings in price and time. This positive attitude makes them more likely to use the app, regardless of their age.
65	Kumar, Jain & Hsieh, 2021	App Design as Behavioral Stimuli Use of Psychological/Behavioral Frameworks	Survey and models SOR, PAD	The visually appealing online food delivery (OFD) apps trigger user pleasure and excitement, encouraging word-of-mouth sharing and repeated use.
66	Lee & Lim, 2023	App Design as Behavioral Stimuli	Quantitative Experimental Design	Showing the same food item multiple times made the images look more appealing. The way food was arranged (compositional lines) also changed how appealing it looked. How food looks can affect how people expect it to taste, which then influences their decision to buy it.
67	Qi et al., 2024	App Design as Behavioral Stimuli	Experimental	Videos showing tasting and plating food catch more attention and improve ordering experience than cooking videos.
68	Nguyen et al., 2023	Use of Psychological/Behavioral Frameworks	Survey	The study found that people are more likely to buy online when they enjoy the experience, see value in it, and have a good attitude toward it. A strong brand image and a fun, easy shopping experience help increase purchase intention.
69	Humbani et al., 2024	Use of Psychological/Behavioral Frameworks	Survey	Satisfaction and trust strongly influenced continued use of mobile food delivery apps, with COVID-19 risk enhancing the effect of system features on user satisfaction.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
		Satisfaction and Reordering		
70	Zhao & Bacao, 2020	Use of Psychological/Behavioral Frameworks Satisfaction and Reordering	Survey	Satisfaction, trust, and task-technology fit were key drivers of continued food delivery app use during COVID-19, influenced by both tech features and user perceptions.
71	Teng et al., 2023	Use of Psychological/Behavioral Frameworks Satisfaction and Reordering	Survey	Users were more likely to keep using food delivery apps after COVID-19 if they found them useful, satisfying, and part of their habit. Satisfaction was driven by trust, expectations being met, and key UTAUT factors.
72	Singh et al., 2024	Use of Psychological/ Behavioral Frameworks Satisfaction and Reordering	Survey	How well a food delivery app looks, works, feels secure, and serves customers builds user attachment, leading to continued use. Men and women differ in how app appearance affects their attachment and continued use of the app.
73	Peng & Kim, 2014	Use of Psychological/Behavioral Frameworks Satisfaction and Reordering	Survey	Hedonic shopping and website appeal improved attitudes and emotional buys, but only positive attitudes led to repurchase, not emotions.
74	Handayani, Azzizah, & Annisa, 2022	Use of Psychological/Behavioral Frameworks Satisfaction and Reordering	Mixed methods approach	Convenience strongly influenced user emotions and continued use of food delivery apps, while price mattered less and trust had no emotional impact. These emotions boosted repeat usage, especially in urban users.
75	Ray et al., 2019	Use of Psychological/Behavioral Frameworks Satisfaction and Reordering	Mixed methods	People use food delivery apps for reasons like finding restaurants, having a good experience, and ease of use, which influence their intention to keep using the apps.
76	Roh & Park, 2019	Use of Psychological/Behavioral Frameworks	Survey	People who want convenience are more likely to adopt food delivery apps if they feel the app fits their lifestyle. However, those with strong moral

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				obligations around meal preparation may resist adopting these apps despite convenience.
77	Okumus et al., 2018	Use of Psychological/Behavioral Frameworks	Survey	The intention to use smartphone diet apps is significantly influenced by performance expectancy, effort expectancy, social influence, and personal innovativeness. Using the UTAUT framework, it highlights key psychological factors guiding app adoption during food ordering.
78	Ciftci et al., 2021	Use of Psychological/Behavioral Frameworks	Survey	Customers are more likely to use facial recognition systems (FRS) in quick-service restaurants when they trust the system and believe it's useful, especially if others around them support it. Fun or enjoyable experiences encourage use for loyalty accounts, while strong security builds trust in using FRS overall.
79	Troise et al., 2020	Use of Psychological/Behavioral Frameworks	Survey	Combining TAM and TPB effectively explains users' intention to adopt online food delivery apps. Among key factors, subjective norms had a stronger influence than personal attitudes, while trust and perceived COVID-19 risks affected adoption in different ways.
80	Belarmino et al., 2021	Satisfaction and Reordering	Survey	Before quarantine, satisfaction came from value, food quality, and ease of use. During quarantine, food quality, speed, and ease of use mattered more.
81	Cho et al., 2019	Satisfaction and Reordering	Survey	Trust was the most important factor driving continued use of food delivery apps, with single- and multi-person households valuing different app features.
82	Yeo et al., 2021	Satisfaction and Reordering	Survey	Key factors driving repeat usage include the app's ease of use and reliability, the level of trust users have in the service, and recommendations or social pressure from others.
83	Akram et al., 2020	Satisfaction and Reordering	Survey	Mobile website quality and brand equity increase ease of use and usefulness, boosting intention to use fast food m-commerce; digital coupons further strengthen this effect.
84	Raza, Asif & Akram, 2022	Satisfaction and Reordering	Survey	Trust in OFDAs boosts trust in restaurants and continuous use; this effect strengthens with effective dispute resolution.
85	Uzir et al., 2021	Satisfaction and Reordering	Survey	Good service and value build trust, which boosts customer satisfaction. Trust partly links service and value to satisfaction.
86	Sharma et al., 2021	Satisfaction and Reordering	Survey	Trust and price advantages positively shaped attitudes toward food delivery apps during COVID-19, with trust also influencing over-ordering. Hygiene concerns reduced trust and

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				quality perception, indirectly impacting usage behavior.
87	Bigne et al., 2020	Satisfaction and Reordering	Mixed-methods	Order of positive/negative reviews influences perception; visuals get more attention than text in online reviews.
88	Ruiz-Mafe et al., 2018	Satisfaction and Reordering	Survey	Consumers process conflicting reviews using both heuristic and systematic routes; review order influences which route dominates.
89	Zhang & Ha, 2024	Satisfaction and Reordering	Longitudinal study	The relationship between satisfaction and intention evolves over time between restaurants and delivery apps. Satisfaction with delivery apps consistently affects restaurant loyalty, but satisfaction with restaurants increasingly influences loyalty to delivery apps.
90	Kaur et al., 2021	Satisfaction and Reordering	Mixed method	Visibility was the strongest driver of purchase intentions, followed by affordability, price, and social prestige; food safety and health concerns had no significant impact.
91	Alalwan, 2020	Satisfaction and Reordering	Survey	Online reviews, ratings, tracking, and user benefits like performance, enjoyment, and price influence customer satisfaction and their intention to reuse mobile food ordering apps in Jordan.
92	Dirsehan & Cankat, 2021	Satisfaction and Reordering	Survey	Good website quality and strong brand equity increase ease of use and usefulness, boosting intent to use fast food apps, especially for users who like digital coupons.
93	Lin et al., 2023	Satisfaction and Reordering	Cross-sectional	The study found that different dimensions of mobile app service quality significantly influenced app satisfaction, food satisfaction, and repurchase intention. Notably, service quality in the pre-consumption stage had strong spillover effects on food satisfaction and future purchase behavior.
94	Ladhari et al., 2017	Satisfaction and Reordering	Survey	In a utilitarian service setting, service quality and environment influence emotional satisfaction, which boosts product quality perception and positive behavioral intentions.
95	Amoroso & Lim, 2017	Satisfaction and Reordering	Survey	Attitude is the strongest predictor of continuance intention, while satisfaction influences it mainly through habit. In uncertain or undifferentiated markets, consumers default to habitual use.
96	Kurniawan et al., 2024	Satisfaction and Reordering	Survey	Satisfaction with OFD services in Indonesia is driven by ease of use, enjoyment, savings, and confirmation; continuance intention is shaped by performance, habit, reviews, and satisfaction.
97	Al Aamin et al., 2021	Satisfaction and Reordering	Survey	Concern for food safety influenced initial use, while feelings of isolation drove continued use.

Sr. No	Study (Author, Year)	Theme	Method	Key Findings
				Behavioral intention also played a key role in linking these factors to long-term app usage.

Zotero was employed as a reference management tool to organize citations and manage bibliographic data. The screening and selection processes were carried out using Rayyan, a web-based platform that facilitates blinded, collaborative reviews and assists in resolving disagreements efficiently. To assess the methodological quality of the included studies, Critical Appraisal Skills Programme checklists were used for qualitative research, and the Mixed Methods Appraisal Tool was used for mixed-methods studies. Studies that scored low in rigor or lacked clear data transparency were excluded during the full-text review stage.

Results and Thematic Synthesis

The data extraction process involved a systematic review of the selected studies to identify recurring concepts, patterns, and findings relevant to the research objectives. A structured extraction template was developed to capture the essential elements of each study, including the author(s), year, research aim, methodology, key findings, and implications. This made the dataset consistent and enabled a more logical synthesis of information.

The six-phase method suggested by Braun and Clarke (2006) was used to conduct thematic analysis of the retrieved data. This included familiarization with the data, creating preliminary codes, searching for themes, evaluating themes, defining and labeling themes, and producing reports. The process was conducted manually using spreadsheets to organize and refine the codes and themes iteratively. For this SLR, an inductive thematic analysis was chosen because of the exploratory nature of this study. This approach allows themes and patterns to emerge naturally from the literature rather than being confined by pre-existing theories. By remaining open to unexpected insights, an inductive analysis enables a richer and more nuanced understanding of the field. It is especially suitable for a continuously evolving subject, where rigid theoretical frameworks might overlook new evidence or alternative perspectives present in existing research.

Theme saturation was monitored throughout the study to ensure the reliability and relevance of the identified themes. A theme was considered valid if it appeared in at least three independent studies, thereby establishing a clear criterion for differentiating between isolated findings and widely supported trends. This careful and transparent approach to synthesizing data strengthened the credibility of the review and provided a rich, well-rounded understanding of the topic based purely on the literature.

Through thematic synthesis, five relevant themes were identified from the literature.

Emerging Themes in ***Consumer Behavior Toward Food Delivery Apps***

The literature review revealed five recurring themes that shape consumer behavior within the food delivery app (FDA) ecosystem. These themes highlight the psychological, emotional, and technological drivers of food choices, impulse buying, and app usage. The themes are:

1. Hunger and Impulsivity
2. Emotional Triggers and Food Preferences
3. App Design as Behavioral Stimuli
4. Use of Psychological/Behavioral Frameworks
5. Satisfaction and Reordering

Theme 1: Hunger and Impulsivity

Kumar and Shah (2021) highlighted that hunger serves as a primary motivator driving consumers to use FDAs, often leading to swift decision-making and a decreased sense of control over their actions. This diminished control, triggered by urgent hunger, may limit the enjoyment typically associated with the use of FDAs. Additionally,

while visually appealing app designs and aesthetics may initially capture users' attention, the resulting excitement appears to be largely driven by consumers' hunger rather than by app features.

Recent studies have shown that FDAs may be linked to an increased fast food intake. These platforms appear to promote irregular eating habits, including eating frequently or in response to external cues, such as images or smells, rather than actual hunger. Literature has increasingly explored the concept of hedonic hunger, a relatively new construct in the field of eating behavior. Hedonic hunger refers to the desire to consume food for pleasure rather than in response to physiological hunger cues (Portingale *et al.,* 2023). Seeing tempting foods often on OFDAs can make people more sensitive to food cues, leading to stronger cravings and eating behaviors, even when they are not actually hungry. This can lead individuals to experience loss of control over their eating habits, a condition often associated with the development of eating disorders (Elran-Barak et al., 2015).

Individuals who are more sensitive to the pleasure derived from food often experience stronger and more frequent cravings, which can sometimes be difficult to manage (van Dillen and Andrade, 2016). This means that those with a heightened sensitivity to food taste may find it harder to resist thoughts about eating and experience craving more often. Overall, earlier characteristics such as intense food cravings and loss of control over eating are linked to the concept of hedonic hunger, a relatively new framework for understanding eating behaviors (Craneet al., 2023).

The literature consistently highlights impulsivity as a key factor influencing consumer behavior, particularly in the contexts of food and online shopping. It is defined as the tendency to act quickly without planning or considering long-term consequences (Bénard et al., 2019). Impulsive individuals often have difficulty exercising self-control, making them more prone to behaviors such as overeating or frequent snacking. These actions are typically driven by the desire for immediate emotional or sensory gratification rather than deliberate decision-making, which can eventually contribute to unhealthy eating patterns or even the development of eating disorders (Bénard et al., 2019; VanderBroek-Stice et al., 2017). Georgii et al. (2017) also mentioned that people with higher impulsivity, especially those who struggle with planning, tended to eat more calories, suggesting impulsivity may increase the risk of overeating. Although impulsive buying is usually spontaneous and situational, compulsive buying is a more severe and persistent behavior that has gained increasing attention in recent studies. Compulsive buying refers to an uncontrollable and ongoing urge to purchase, and is often used to cope with negative emotions and psychological discomfort (Faber and O'Guinn, 1989). It is considered a behavioral addiction rather than merely an intensified form of impulsive buying (Maccarrone-Eaglen and Schofield, 2017). Pradhan et al. (2018) also emphasized that compulsive buying is closely linked to addictive behavior and continues despite clear negative consequences such as financial or emotional problems. Furthermore, research by Darrat et al. (2016) suggests that impulsive buying can increase anxiety levels, potentially contributing to the development of compulsive buying habits.

There are several psychological and emotional factors associated with compulsive buying, including anxiety, loneliness, low self-esteem, and online addiction (Zheng et al., 2020). In addition, social comparison plays a significant role as an external trigger, with individuals often engaging in compulsive purchases to enhance their self-image or align themselves with perceived societal expectations (Kukar-Kinney et al., 2016).

Theme 2: Emotional Triggers and Food Preferences

Despite the rapid expansion of e-commerce and online shopping platforms, comprehensive research on the emotional factors that influence online consumer behavior remains limited. For example, Saintives (2020) noted a lack of extensive empirical work addressing how emotional factors influence behavior in digital shopping contexts, highlighting a gap in the existing literature. The literature converges on the view that emotional expression in consumption is shaped not only by internal affective states but also by an interaction between individual personality traits and situational or contextual factors (Matz and Harari, 2021). Furthermore, emotions are acknowledged as essential determinants of human behavior, particularly in the context of eating, where they impact not only the selection and quantity of food consumed but also the frequency of eating episodes. These decisions are often guided by emotional states rather than physiological needs (Dantec *et al.,* 2021). The concept of "food emotions" has therefore emerged to capture the diverse emotional reactions elicited by the selection and consumption of food. Food is not only consumed for its nutritional value but also serves an emotional function. It

is often used to enhance positive experiences or cope with negative emotions, indicating its role as a tool for emotional regulation in different life contexts (Cancellieri *et al.,* 2022).

By contrast, food preference means having a general liking for certain foods that remain the same regardless of the situation in which they are eaten (Meiselman, 1996). However, these preferences are influenced by a mix of biological and psychological factors, as well as environmental, situational, and cultural influences. A person's sociodemographic background, such as age or sex, can affect their food preferences. This indicates that food preferences result from a combination of individual traits, surroundings, and social factors (Cancellieri *et al.,* 2022). Individuals tend to select foods that elicit positive emotional responses more frequently. This pattern is attributed to these foods being regarded as favorite items, and their consumption serves as a primary source of pleasure, thereby enhancing individuals' motivation to eat them (Cancellieri *et al.,* 2022). In addition to its fundamental nutritional role, food is increasingly acknowledged as a cultural and emotional phenomenon. It embodies more than mere survival instincts, and functions as a medium for memory evocation, social connections, and shared experiences. One key aspect is how food triggers emotions, whether through the sensory qualities of flavor or the context in which consumption occurs (Cancellieri *et al.,* 2022).

Limited research on EE has focused on how individual emotions uniquely influence eating behaviors (Braden *et al.,* 2018). EE refers to eating because of feelings rather than hunger. EE includes two main behaviors: emotional overeating, where people eat more when they feel emotional, and emotional undereating, where emotions cause people to eat less. Both patterns have been observed in children and adults, indicating that emotions can influence eating habits at any age (Chawner and Filippetti, 2024). Emotional undereating is more common among children (Messerli-Bürgy *et al.,* 2018). However, most studies have concentrated on emotional overeating, possibly because it is simpler to assess and has more obvious connections with overweight and obesity (Chawner and Filippetti, 2024).

Several studies indicate that regular food consumption through online ordering platforms may contribute to a higher likelihood of emotional overeating (Portingale *et al.,* 2023; Xu *et al.*, 2019; Zhang *et al.,* 2022). Experiencing hunger can amplify certain emotional disturbances, including irritability, mental exhaustion, and heightened psychological stress such that the popular term *"*hangry*"* has emerged to describe this state of being both hungry and irritable (Ackermans *et al.,* 2022). From a theoretical standpoint, such emotional discomfort may trigger an increase in food consumption because eating is often used as a coping mechanism to manage unpleasant feelings. The act of consuming food can temporarily soothe emotional distress, functioning as both a source of relief and a pleasurable experience. This cycle is negatively reinforced over time by reducing discomfort and positively by stimulating the brain's reward system (Crockett *et al.,* 2015; Klatzkin *et al.*, 2022). Nevertheless, there are notable individual differences in EE behaviors, suggesting that responses to negative emotions vary significantly across individuals. When people struggle to manage these hunger-driven negative emotions effectively, that is, adaptively, it can lead to overeating. (Ackermans *et al.,* 2024).

Expanding on these findings, recent literature has highlighted how specific emotions, particularly boredom and loneliness, play a direct role in shaping eating behaviors. Boredom is increasingly recognized as a distinct emotional driver of food intake, separate from emotions such as stress or sadness. Experimental evidence dating back to 1977 showed that boredom prompted increased food intake in both healthy and obese individuals (Abramson and Stinson, 1977). Despite these early findings, scholarly attention has only recently returned to exploring the impact of boredom on eating patterns (Crockett *et al.,* 2015). During the COVID-19 pandemic, boredom-induced eating was associated with increased snacking and reduced intuitive eating, although overall dietary quality remained stable (Jackson *et al.,* 2021). Although boredom and positive emotions trigger eating, it is still unclear whether eating in response to these emotions leads to the same negative physical and psychological outcomes as eating driven by commonly studied negative emotions, such as sadness or anxiety (Braden *et al.,* 2018).

The literature has also examined how a lack of emotional and social connections can lead to increased cravings and unhealthy food consumption. Loneliness also affects food-related decisions. Weiss (1973) differentiated between emotional loneliness (caused by the absence of close relationships) and social loneliness (caused by the lack of broader social networks), both of which can lead individuals to seek comfort through food. Saine and Zhao (2021) found that loneliness shapes how consumers respond to advertising, evaluate food products, and make

consumption choices. Henriksen *et al.* (2014) found that pregnant women who felt lonely were more likely to consume sweet drinks, whereas those who felt socially connected consumed fewer drinks. Tomova *et al.* (2020) found that young adults who were socially isolated responded in similar ways, both behaviorally and neurologically, to those who were food-deprived. Their study showed that social isolation increased negative emotions and desire for social interaction, whereas fasting increased feelings of hunger and food cravings. Similarly, Naeem (2020) found that fear-related factors, along with social influences and misinformation, significantly increased panic-driven impulsive buying during COVID-19. This is because, when environmental changes occur too quickly or intensely, individuals may struggle to process the situation rationally, leading emotions to take over. This emotional overwhelming can trigger behaviors such as panic buying (Laato *et al.,* 2020). In contrast, Mehrolia *et al.* (2021) found that people who felt more threatened by COVID-19 had a low interest in food delivery or saw fewer benefits and were less likely to order food online during the pandemic. Frequent users before the lockdown were more likely to continue using FDAs. The existing literature highlights the need to examine panic buying from economic, social, and psychological perspectives. However, empirical research exploring the key factors driving consumer panic purchasing remains limited (Laato *et al*., 2020). Gordon-Wilson (2020) found that during the COVID-19 crisis, consumers showed increased self-control in their shopping habits but reduced control over snacking and alcohol consumption. Moore and Konrath (2015) found that strong emotions can lead to food cravings and influence eating intentions mainly because of three factors: emotional memories, low self-control, and the anticipation of pleasure.

Mood also plays a role. Results from four experiments by Gardner *et al.* (2014) showed that when people are in a good mood, they are more likely to think about long-term goals, such as staying healthy, so they choose healthy foods. By contrast, when people are in a bad mood, they focus more on immediate comfort, which makes them prefer indulgent or less healthy foods. These behavioral patterns are observed in both general retail shopping and online food ordering. In addition, individuals with easier access to food tend to eat more frequently in response to their emotions.

Guilt has recently gained significant attention in consumer research as a robust emotional response triggered by the purchase or use of certain products (Lancellotti and Thomas, 2018). It is a core emotion linked to consumption that influences various consumer behaviors including impulsive buying, coping strategies, and satisfaction. Common triggers include indulging in pleasure-oriented foods and purchasing unnecessary items (Saintives, 2020). Zenk et al. (2014) found that individuals experiencing higher daily stress levels tended to consume more snacks, a tendency amplified when snacks were readily accessible. This suggests that food availability can intensify the link between emotional distress and increased eating habits. Research by Rising and Bol (2017), VanderBroek-Stice et al. (2017), and Garza et al. (2016) indicated that differences in self-control and impulsivity significantly affect people's ability to regulate their eating habits. Those with stronger self-control are better at avoiding unhealthy food choices, whereas more impulsive individuals often struggle to resist cravings. They may be more prone to overeating or selecting less nutritious options. These personality traits help explain why some individuals are more susceptible to unhealthy eating behaviors than others.

Theme 3: App Design as Behavioral Stimuli

The literature suggests that the growth of mobile commerce is an essential driver of impulse purchase behavior. This is primarily due to its portability, visual engagement, and user-friendly design. (Zheng et al., 2019). An appealing and well-structured interface is essential during the early phases to motivate users to explore and quickly find relevant information. Previous studies have also examined how menu descriptions influence diners' behavioral intentions (Fakih et al., 2016), how design elements shape consumer perceptions (Magnini and Kim, 2016), and the role of images and food names in menu evaluations (Hou et al., 2017). Moreover, the literature highlights the role of visual menu cues (food pictures) in forming expectations and influencing satisfaction, trust, and behavioral intentions (Cai and Chi, 2021). For instance, Lee and Kim (2020) stated that video menus catch customers' attention better and create stronger mental images of food, which increases their desire to eat and order. Videos help customers imagine dishes more vividly than pictures or text alone, making dining choices easier and more appealing. This effect is stronger for people who think visually. This study highlighted that video menus generate the strongest mental imagery and desire to eat, followed by pictures, narration, and conventional menus (Lee and Kim, 2020). Brewer and Sebby (2021) demonstrated that the visual appeal and informativeness of online

menus significantly influenced consumer purchase intentions during the COVID-19 pandemic. These effects were mediated by consumers' desire for food and perceived convenience of online food ordering, highlighting the importance of digital presentations in times of heightened health risks. Moreover, Xu and Huang (2019) stated that different types of information and images on FDAs influence what people expect and choose to order. However, people react differently depending on how much they think carefully about the information. Some focus on detailed facts, while others respond more closely to simple pictures or messages. To appeal to all customers, restaurants should design app content that combines clear, engaging images with easy-to-understand, but informative messages. This tailored approach helps improve customer satisfaction and increase food orders. Although these investigations provide valuable insights into strategies that may increase consumer engagement and purchase behavior, few studies have addressed the influence of a menu's visual appeal and informativeness on consumers' psychological states and purchase intentions.

In online shopping settings, consumers find value from information in two ways: enjoyment (hedonic) and usefulness (utilitarian). The hedonic aspect relates to how fun or enjoyable experiences are often linked to a visual appeal or entertainment. On the other hand, the utilitarian side focuses on how helpful or practical the information is for making decisions or completing a task (Li et al., 2020). Users often engage with platforms to prioritize enjoyment and emotional gratification, such as feeling pleasure during the information-seeking process. This form of hedonic browsing captures consumers' desire for an engaging and entertaining experience even if it does not result in an actual purchase. Previous studies (Roggeveen et al., 2015; Wang et al., 2022) found that using dynamic formats such as videos can better showcase rich sensory details, making them ideal for sharing enjoyable or emotional (hedonic) content. In contrast, simpler formats, such as images and text, provide practical (utilitarian) information (Zhang et al., 2020). Pillai et al. (2022) highlighted that people's attitudes and buying intentions for online food delivery depend on how well an app or website persuades them through clear information and an appealing design. These factors collectively influence whether consumers want to order food online. However, the research on the effects of these formats on users remains limited. For OFDS, visually appealing components such as gamification and high-quality food imagery are purposefully created to arouse positive emotions and produce a fulfilling user experience. By appealing to the emotional aspects of consumption, these immersive design elements not only increase user engagement but also influence decision-making (Gunden *et al.,* 2020). A website's overall design and visual appeal have a significant impact on user behavior. Features such as appealing visuals and a clear, organized design can trigger positive emotions such as pleasure, enthusiasm, and feelings of control. These responses motivate users to interact with the platform (Chang *et al.,* 2014; Loureiro *et al.,* 2020). Furthermore, several elements of app design, including the way information is displayed, how users move between pages, and the general appearance, affect the choices made by users regarding food delivery services. Information that has the strongest correlation with users fulfilling their orders is clear and helpful Additionally, seamless page navigation enhances user experience and increases the likelihood of purchase. Although visual appeal has a smaller direct impact on conversion, it still contributes to making the app more attractive and user-friendly (Kapoor and Vij, 2018). In contrast, Atulkar and Singh (2021) stated that perceived price and visual design have no significant effect. Overall, user-friendly technology and promotional offers are the key drivers of customer conversion and retention. In online food delivery settings, simulations are often triggered by well-designed, visually rich menus that not only capture attention but also evoke cravings, ultimately boosting consumers' intention to order (Le *et al.,* 2023).

The design and functionality of FDAs strongly affect user experience and behavior. However, the link between app features and consumer decisions is still being explored (Kapoor and Vij, 2018). Prabhu and Soodan (2020) explored how features such as navigation, secure payment, and real-time order tracking shape decision-making. Kapoor and Vij (2018) showed that visually appealing layouts and clear information improve user trust and increase order intentions. Pigatto *et al.* (2017) found that among the various aspects examined in food delivery platforms, content was the most prominent feature, receiving the highest attention, followed by functionality and usability. They suggested that for an effective user experience, developers should focus primarily on delivering relevant content, ensuring seamless functionality, and creating an intuitive interface. Allah Pitchay *et al.* (2022) revealed that user perceptions of poor interface clarity and the anticipated effort required to learn app functionality negatively influenced their intentions to adopt OFDS. When a design is viewed as overly complex or not user-friendly, it discourages engagement and reduces the likelihood of continued use.

Emotional design plays a significant role in this process. Kumar *et al.* (2021), using the SOR framework, showed that visual appeal leads to emotional reactions (pleasure and arousal) that drive behaviors, such as app reuse and positive word-of-mouth. Similarly, Kumar and Shah (2021) applied the PAD (pleasure-arousal-dominance) model and found that app aesthetics influenced emotions such as pleasure and dominance, which increased repeated use.

Lee and Lim (2023) highlighted the importance of visual composition, showing that food items with specific patterns (such as vertical arrangements) increase visual appeal, enhancing perceived taste and purchase intent. Similarly, Qi *et al.* (2024) revealed that videos highlighting food tasting and plating attract greater visual attention and enhance the overall ordering experience.

In short, well-designed apps not only simplify ordering but also trigger emotional satisfaction, increasing customer loyalty and impulsive buying.

Theme 4: Use of Psychological/Behavioral Frameworks

In the context of this SLR, the expectation–confirmation model (ECM) developed by Oliver (1980) has emerged as a pivotal framework for understanding users' continued engagement with technology, particularly following initial adoption. The ECM was adapted from the theory of planned behavior (TPB), which has long provided a basis for examining consumer behavior, satisfaction, and repeat purchase intention in areas such as service marketing. However, while the TPB primarily explains initial behavioral intentions, the ECM is centered on the post-adoption stage, making it especially relevant for studying sustained technology use (Nguyen *et al.,* 2023). Across the reviewed studies, ECM has been widely applied to investigate why users remain loyal to various information systems and digital platforms. This framework emphasizes the importance of users' expectations, their later experiences, and the satisfaction derived from those experiences in shaping their intention to keep using a system (Humbani et al., 2024). Recent studies have further applied this ECM to FDAs, demonstrating its usefulness in understanding continued user engagement in this area (Teng et al., 2023; Zhao and Bacao, 2020). These results demonstrate that the ECM is a strong model for analyzing technology usage over time, thus confirming its relevance for emerging digital service platforms. Originally developed in environmental psychology, the SOR (stimulus-organism-response) framework has recently gained recognition for its application in digital and online settings (Dara Singh et al., 2025). Researchers have used the SOR theory to analyze consumer behavior in contexts such as OFDS and e-commerce (Peng and Kim, 2014). These findings indicate that the SOR model effectively explains how technological stimuli and digital environments influence users' emotions, thoughts, and actions. In the context of FDAs, the SOR framework is interpreted with stimulus (S) as the app's features, organism (O) as the user's emotional attachment or connection to the app, and response (R) as the intention to continue using the app (Dara Singh et al., 2025). Overall, the SOR model is a valuable tool for analyzing the impact of external digital cues on users' internal psychological states and subsequent behaviors on digital platforms. Chang et al. (2014) combined the S-O-R framework with the PAD emotional model to study how web aesthetics affect online consumer behavior. Their findings revealed that platforms with visually pleasing and well-structured interfaces give users a heightened sense of control, which positively influences emotional states such as pleasure. This increased sense of pleasure subsequently increases purchase intentions, demonstrating that web aesthetics play a significant mediating role in shaping customer decisions for online shopping. Drawing from the uses and gratifications (U&G) theory, Ray et al. (2019) examined the motivations behind FDA usage and identified eight key drivers: platform listings, user-friendliness, convenience, social influence, customer experience, satisfaction with delivery, ease of restaurant discovery, and quality control. This study found that continued use is most strongly shaped by platform listings, customer experience, restaurant searchability, and convenience. This theoretical approach offers nuanced insights into both initial adoption and sustained engagement with FDAs, emphasizing the factors that most effectively nurture long-term user involvement. By leveraging the U&G framework, this study highlights how individuals selectively engage with platforms to fulfill various practical and psychological needs. The U&G theory originated in the 1940s and focused on how individuals actively seek media to fulfill their felt needs. Its application broadened during the 1960s, as researchers began examining audience choices in television and mass media consumption. By the 1970s, scholars such as Katz et al. (1973) further developed the theory, establishing its relevance in understanding a wide range of media behaviors. Since the 1980s, U&G have evolved into a leading framework for analyzing interactions with various media technologies, including modern platforms such as FDAs (Ray et al., 2019). Recent research on

online food delivery systems has frequently applied the unified theory of acceptance and use of technology (UTAUT) to unpack the factors that influence consumer choices and continued use. UTAUT proposes that technology adoption and usage are largely determined by social influence, effort expectancy, performance expectancy, and facilitating conditions (Venkatesh et al., 2003; Venkatesh et al., 2012). For online food ordering, social expectations from peers and family, perceived ease of use, and anticipated service benefits all play a significant role in shaping consumers' intent to use these platforms over time (Roh and Park, 2019; Zhao and Bacao, 2020).To enhance the predictive accuracy of the model, several studies on online food delivery systems (OFDS) have adapted and extended the UTAUT, incorporating additional factors, such as trust and concerns about food safety (Ciftci et al., 2021; Okumus et al., 2018; Troise et al., 2020). Specifically, trust in the platform and apprehensions regarding food safety have been play pivotal roles in shaping not only users' intentions to engage with these services, but also their actual ordering behavior (Zhao and Bacao, 2020).

Theme 5: Satisfaction and Reordering

Understanding customer satisfaction is fundamental to understanding consumer behavior as it reflects the emotional outcome of a customer's entire service experience. In the food service sector, there is a consistent and positive correlation between customer satisfaction and behavioral intentions, such as repeat visits and additional purchases (Belarmino et al., 2021). Zhao and Bacao (2020) highlighted the pivotal role of user satisfaction in influencing customers' intentions to reorder through FDAs, which directly affects real purchasing behavior. Moreover, multiple studies have explored the key determinants that influence customer willingness to engage in OFDS, emphasizing the critical factors that drive sustained user participation (Cho et al., 2019; Gunden et al., 2020; Yeo et al., 2017). Gunden et al. (2020) revealed that consumers are more inclined to adopt OFDS when the services resonate with their personal identity and meet their performance expectations. Similarly, Akram et al. (2020) highlighted the critical role of website quality in influencing user satisfaction and purchasing patterns. Cho et al. (2019) identified trust, convenience, app design, and menu variety as the key factors fostering ongoing user engagement. Raza et al. (2023) further emphasized that trust extends beyond delivery platforms to include associated restaurants, deeply impacting customers' likelihood of making repeat purchases. Effective dispute resolution mechanisms significantly bolster trust. Additionally, inherent trust tendencies and the influence of online reviews are vital for establishing initial trust in FDAs. These insights offer practical guidance to developers and restaurant partners for building consumer confidence and loyalty. Moreover, Uzir et al. (2021) mentioned that customer satisfaction is driven by service quality, perceived value, and trust. Trust partially explains how service quality and value lead to satisfaction. Sharma et al. (2021) found that trust and price benefits make people feel more positive about using FDAs and trust leads to ordering more food. Concerns about hygiene reduce trust and quality ratings. Bigne et al. (2020) mentioned that the order of positive and negative reviews affects how consumers interpret online content, showing strong primacy-recency effects. Visual content attracted more attention than text, regardless of the review order. Ruiz-Mafe *et al*. (2018) highlighted that the placement of reviews also plays an important role, as people use both quick (heuristic) and careful (systematic) thinking when reading mixed online reviews. If they see negative reviews first, they tend to think more deeply before making a decision. Roh and Park (2019) identified compatibility, ease of use, and usefulness as significant influences on usage intentions. Ray and Bala (2021) emphasized the importance of price advantages, trust, and interactive features. These varying results indicate that there is no single set of predictors that consistently defines customer intention to use OFD services. Moreover, Zhang and Ha (2024) stated that over repeated interactions, the role of restaurant satisfaction grows stronger in encouraging continued use of FDAs, while FDA satisfaction consistently supports restaurant-related intentions. This dynamic reflects the evolving consumer priorities and experiences in the connected restaurant and delivery platform ecosystem. Kaur *et al.* (2021) found that users primarily choose FDAs because they offer clear information, convenience, good prices, and social status. However, concerns about food safety and health did not strongly influence the decision to use these apps. Moreover, Alalwan (2020) found that features such as online reviews, ratings, and tracking and factors such as performance, enjoyment, and price value significantly boost customer satisfaction and reuse intention for mobile food ordering apps. Mobile food ordering app operators can improve the customer experience by focusing on core mobile technology features such as personalization, responsiveness, continuous connectivity, and user control. When customers receive personalized services, they are more likely to perceive higher value from using the app and report greater satisfaction. Dirsehan and Cankat (2021) found that satisfaction with mobile food ordering apps significantly

boosted both brand satisfaction and customer loyalty toward restaurants during the pandemic. This highlights the importance of collaboration between restaurants and MFOA providers to strengthen brand relationships. Yeo *et al.* (2021) found that satisfaction with mobile app services has a significant positive impact on users' intention to reorder from an online FDA. They introduced the idea of "mobile app servitization," emphasizing that when users are pleased with aspects such as ease of use, perceived usefulness, information quality, and security, they are more likely to order again from the app. Hence, existing literature has predominantly emphasized trust and service quality, with relatively limited attention given to satisfaction or behavioral intentions influenced by emotional responses. Customer satisfaction with an FDA plays a key role in linking service features such as efficiency and billing to overall satisfaction with the delivered food. This suggests that positive experiences with an app's convenience-oriented features can enhance customers' feelings about their meals (Lin *et al.,* 2024). When the ordering process is smooth and efficient, especially for users who may be hurried, meal satisfaction improves. These findings are consistent with Ladhari *et al.* (2017), who reported that when customers' emotional needs are met during service interactions, they are more likely to be satisfied with the products they receive, including food. Amoroso and Lim (2017) found that users satisfied with mobile app services often developed a habit of using similar apps. Habit refers to an individual's automatic behavior based on repeated past experiences. Users' continued use of services is strongly influenced by their established habits. In addition, customer satisfaction has consistently emerged as a key driver influencing the intention to continue using a service over time. This habitual use of OFDS developed notably during the COVID-19 pandemic, driven by the various conveniences and benefits offered by these platforms to users. (Kurniawan *et al.,* 2024). During the pandemic, food safety mattered for first-time use, whereas feeling isolated influenced ongoing use (Al Amin *et al.*, 2021). Figure 2 presents the HEA conceptual framework for Hunger, Emotional triggers and App Design Stimuli in Online Food Ordering Behaviour.

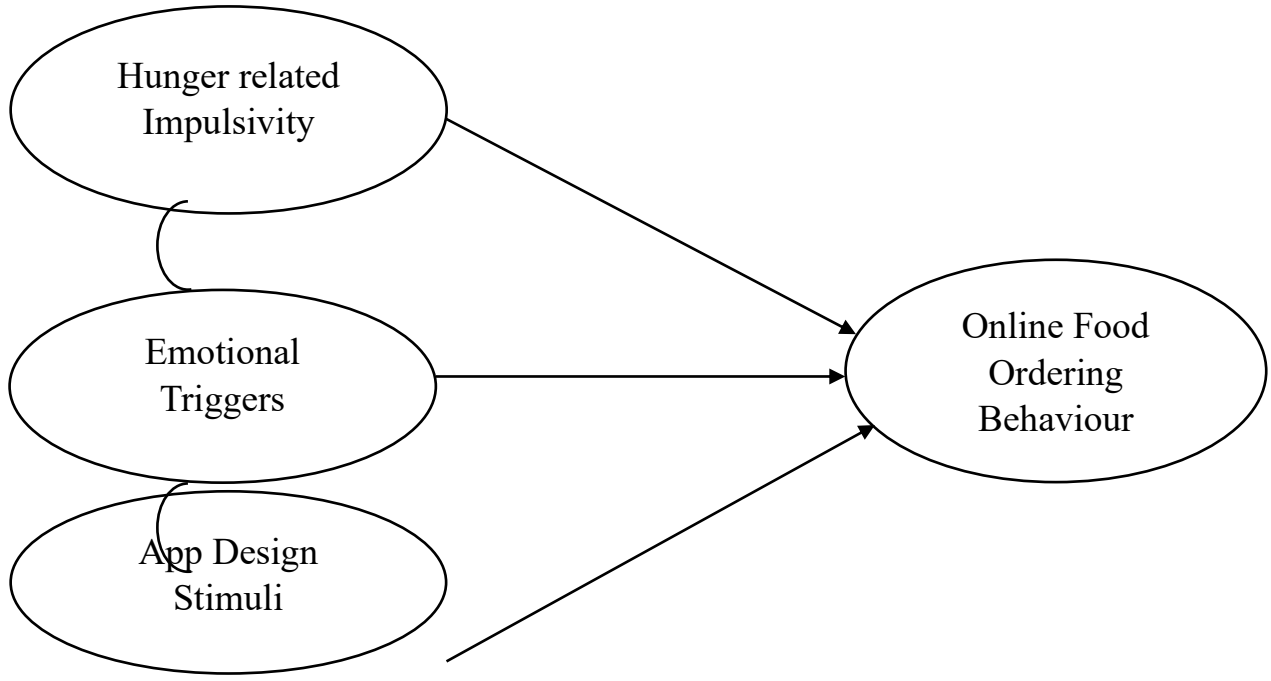

Figure 2: HEA Online Food Ordering Framework for Hunger and Emotional Triggers

Discussion

Food is important in dining, not just because people need it to survive, but also because eating can make people feel emotionally good. Thus, when researchers study how people think and act toward online FDAs, they should pay attention to the role of food in shaping their thoughts and behaviors (Lin *et al*., 2024). Findings across multiple contexts affirm that hunger is a primary and immediate driver of food ordering via apps, often fostering rash decision-making and reducing self-control (Kumar and Shah, 2021). Unlike traditional hunger, "hedonic hunger" emerges in food-abundant digital environments where visually stimulating cues can trigger cravings even in the absence of physiological need (Portingale *et al.,* 2023). To examine how a food-abundant environment influences

people psychologically, researchers have developed the concept of hedonic hunger, which is now widely used in studies on eating behavior (Crane *et al.,* 2023). These findings indicate that hedonic hunger may share underlying mechanisms with behavior, particularly in environments where highly palatable foods are frequently promoted, such as FDAs. Therefore, the role of hedonic hunger warrants further investigation in digital food environments, where sensory and emotional triggers may amplify its effects.

At the same time, impulsivity plays a decisive role in online ordering behavior. App interfaces capitalize on impulsive tendencies by streamlining purchase steps and showcasing appealing food imagery, frequently resulting in overconsumption and, in some cases, unhealthy eating habits (Bénard *et al.,* 2019). Frequent users of OFDS are young, urban, and experienced in digital purchasing, which may also correlate with their higher impulsivity (Dana *et al.,* 2021). Furthermore, the interplay between impulsivity and hedonic hunger highlights the complex self-regulation challenges faced by users within the OFDS ecosystem.

The analysis of emotional triggers and moods as influences on food choices in online food delivery settings highlights a significant shift in how people respond to their feelings in today's digital environment. EE, a long-recognized coping mechanism for both children and adults, is now easier with digital platforms. These apps simplify moods, especially stress, boredom, and loneliness, to quickly make decisions to order comfortable foods that are often high in sugar or calories (Ackermans *et al.,* 2022; Zenk *et al.,* 2014).

A key insight is that the ordering process is so quick and easy that people require less time and effort to act on their cravings or emotional urges. When satisfying these feelings requires only a smartphone tap, people are more likely to order food impulsively. This increased convenience can make EE a more common everyday response, potentially hiding patterns of emotional vulnerability that may otherwise be interrupted if additional effort is required. Recent studies have shown that loneliness and boredom increase cravings for unhealthy foods even more (Doan *et al.,* 2022; Henriksen *et al.,* 2014). While ordering food to feel better can help in the short term, over time it may lead people to rely more on food for comfort rather than using internal strategies to cope with negative emotions.

Notably, not everyone reacts to these emotional triggers in the same manner. Individuals who tend to act on impulses or have low self-control are particularly likely to use OFDS to satisfy their emotional needs. This highlights the need for apps to develop features or suggestions that support healthier habits, for example, by prompting users to pause and reflect before placing an order or recommending better food choices to those who may be more vulnerable.

The role of app design in shaping user behavior goes beyond mere aesthetic appeal; it is a potent behavioral stimulus that can unconsciously influence decision-making. Digital platforms blend hedonic elements, such as vivid imagery and gamification, with utilitarian features, such as clear navigation and information clarity, to engage users emotionally while facilitating ease of ordering (Kapoor and Vij, 2018; Kumar *et al.,* 2021). Such dual functionality has important implications. While visually enriched apps can evoke positive emotions such as pleasure and excitement that encourage impulsive buying (Gunden *et al.,* 2020), they also streamline decision processes, potentially reducing conscious deliberation over food choices.

However, this balance introduces ethical tensions. Design elements that make a platform enjoyable and easy to use may also exploit vulnerabilities, particularly among users with impulsivity or poor self-regulation (Allah Pitchay *et al.,* 2022). From a behavioral economics perspective, these emotionally charged cues can create "digital nudges" that promote frequent consumption of energy-dense foods, an issue underexplored in current research. Moreover, given the growing diversity of OFD users, understanding how different demographics respond to these stimuli is essential. For instance, what motivates younger users to engage in immersive visuals may not apply to older or less-technology-savvy groups. Hence, future design strategies should consider not only engagement metrics but also the potential to promote healthier and more mindful consumption patterns, balancing commercial objectives with consumer well-being (Le *et al.,* 2023; Zhang *et al.,* 2020).

Various behavioral models and theoretical framework such as the ECM (Bhattacherjee, 2001), stimulus-organism-response framework (Dara Singh *et al.,* 2025), and UTAUT (Venkatesh *et al.,* 2003) are instrumental in decoding user adoption and sustained engagement with OFD platforms. These frameworks account for both cognitive

evaluations and emotional responses, expanding beyond traditional technology acceptance to include gratification and habit formation (Ray *et al.,* 2019; Zhao and Bacao, 2020).

However, a critical examination revealed gaps in fully capturing the nuances of digital food consumption. Most models emphasize rational decision-making or focus on usability and social influence but often underrepresent the powerful role of hedonic drives and impulsivity inherent in food-related behaviors. The incorporation of emotional cues and gratification elements via the SOR model works toward bridging this gap, illustrating how app stimuli evoke internal emotional states that guide usage intentions. However, the complexity of digital eating behaviors suggests the necessity of integrative theories that combine behavioral economics, affective neuroscience, and consumer psychology. Such models would better explain how repeated exposure to appetitive cues leads to habit formation, potentially overriding satiety signals and contributing to overconsumption, a concern that is increasingly relevant in the OFD context (Handayani *et al.,* 2022; Kumar *et al.,* 2021).

Furthermore, as trust and perceptions of food safety emerge as additional factors that influence continued usage (Okumus *et al.,* 2018; Troise *et al.*, 2020), consumer behaviour oriented frameworks must evolve to accommodate these multidimensional influences. Thus, future research should prioritize the development of more holistic models that reflect the interplay of the cognitive, affective, social, and technological forces that shape consumer behavior in online food delivery.

Customer satisfaction continues to be a foundational element that shapes repeated engagement with and loyalty to OFD services. Most studies affirm that satisfaction derives not only from functional attributes, such as app usability, delivery speed, and food quality, but also from the fulfillment of emotional and social needs (Belarmino *et al.,* 2021; Lin *et al.,* 2024). This multifaceted satisfaction forms the basis for habit development, as repeated rewarding experiences cultivate automaticity in ordering behaviors (Amoroso and Lim, 2017). The COVID-19 pandemic has accentuated this trend, accelerating the habitual use of OFD platforms across various populations and solidifying these behaviors into long-term consumption patterns (Kurniawan *et al.*, 2024).

However, this automaticity requires critical reflections. While habitual ordering can signal brand loyalty and service success, it may also mask less-conscious food choices driven by convenience or emotional needs rather than nutritional goals. Emotional attachments to platforms, such as identity formation and dependence, further complicate the picture, potentially reducing users' motivation to alter their consumption despite health concerns (Yeo *et al.,* 2021).

Furthermore, a wide range of factors, including pricing, menu variety, and interface trustworthiness affect customer satisfaction, demonstrating that no single element ensures ongoing engagement (Cho *et al.,* 2019; Roh and Park, 2019). Different customers have unique preferences; therefore, it is important to create strategies that fit each group rather than relying only on satisfaction scores to predict healthy usage. While satisfaction and habits are important for the success of online food delivery platforms, sustainable success demands knowledge of how these factors affect consumer psychology and the environment. Businesses and researchers must find the correct balance between satisfying corporate objectives and promoting user well-being.

Online food delivery (OFD) platforms have existed since the 1990s but have experienced rapid growth during the COVID-19 pandemic when lockdowns and dining restrictions pushed more people to rely on them. As these platforms became a part of everyday life, ordering food on impulse became much easier, which can sometimes lead to emotional overeating.

Theoretical Contribution

This review advances our understanding of OFDS consumption by integrating multiple psychological, emotional, and technological perspectives that shape consumer behavior.

First, the integration of hedonic hunger and impulsivity as key constructs extends traditional behavioral models by highlighting how motivations for using online food delivery platforms go beyond physiological needs to include hedonic drives and personality traits linked to poor self-control (Bénard *et al.*, 2019; Kumar and Shah, 2021; Portingale *et al.,* 2023). This complements established theories, such as UTAUT and ECM, by emphasizing non-rational, affect-driven aspects influencing ordering decisions.

Second, this review emphasizes that emotional triggers, including boredom, loneliness, stress, and mood states, are critical determinants of food preferences and consumption patterns (Abramson and Stinson, 1977; Ackermans *et al.*, 2022; Chawner and Filippetti, 2024; Pieters, 2013). Situated within frameworks such as S-O-R (Dara Singh *et al.,* 2025), these findings highlight how app environments interface with users' internal emotional states and mediate consumption behaviors.

Third, the focus on app design as a behavioral stimulus advances the literature by applying concepts such as grounded cognition theory and demonstrating how sensory-rich cues, such as vivid images and gamification, elicit cravings and reinforce appetitive behaviors (Le *et al.,* 2023). This shifts the perspective of app interface design from merely utilitarian or aesthetic features toward active emotional and behavioral drivers (Gunden *et al*., 2020; Kumar *et al.*, 2021).

Moreover, the synthesis reaffirms the importance of habit formation and satisfaction as drivers of continued use, expanding models such as the ECM and U&G by recognizing emotional attachment and identity-related bonds to platforms as significant factors (Ray *et al.,* 2019; Yeo *et al.*, 2021).

Finally, this comprehensive analysis identifies the need for interdisciplinary frameworks combining behavioral economics, affective neuroscience, and consumer psychology to better explain habitual overconsumption and self-regulation challenges intensified by digital stimuli in OFDS (Crane *et al.,* 2023; VanderBroek-Stice *et al.,* 2017).

Practical Implications

Based on thematic insights into user behavior shaped by hunger, impulsivity, emotions, app design, psychological factors, and satisfaction outcomes, the following practical recommendations aim to balance commercial success with user well-being and sustained engagement.

Minimize Impulsive Ordering While Supporting Convenience

Integrate Reflective "Pause and Review" Features: Implement brief, unobtrusive prompts before order finalization, encouraging users to verify or reconsider their selections. This helps encourage mindful eating, reduces feelings of regret after buying, and builds stronger trust and loyalty over time (Bénard *et al.,* 2019; Kumar and Shah, 2021).

Leverage AI-Powered Personalized Suggestions: To responsibly satiate cravings, utilize machine learning to identify behaviors that point to high impulsivity or hedonic hunger, and provide balanced or healthier options that are consistent with user preferences and situations (such as the time of day) (Portingale *et al.,* 2023).

Address Emotional Eating and Support User Well-Being

Incorporate Optional Mood-Check Features: Provide users with simple tools to report their emotions along with helpful prompts that remind them of common EE triggers such as boredom or feeling lonely (Ackermans *et al.,* 2022; Pieters, 2013).

Promote Healthy Comfort Foods and Social Interaction Options:Select "feel-good" meals that match nutrition goals and include features that encourage social interaction, such as group ordering or shared meal experiences, to support emotional needs in healthier ways (Doan *et al.,* 2022; Weiss, 1973).

Use consumer appropriate Nudges for Portion Control and Balanced Choices: Send gentle reminders to users about appropriate portion sizes and suggest nutrient-rich side dishes to help manage overeating during emotional moments.

Design Emotionally Engaging Yet Balanced App Experiences

Balance Hedonic Visuals with Utilitarian Clarity: Combine appealing, high-quality images and videos of food with user-friendly, simple navigation and clear, helpful information to engage users effectively without overstimulating cravings (Kapoor and Vij, 2018; Kumar *et al.,* 2021).

Apply Ethical Gamification:

Utilize game elements to increase engagement and loyalty but avoid designs that encourage compulsive ordering. Reward schemes can incentivize balanced eating and repeated healthy choices, instead of frequent impulsive purchases.

Apply Behavioral and Psychological Models to Enhance Retention

Monitor User Satisfaction and Emotional Responses Continuously: Utilize models such as ECM and SOR for dynamic adaptation of app features based on real-time feedback, improving satisfaction and user experience over time.

Tailor Engagement through Motivations and Context:

Incorporate insights from the U&G and UTAUT frameworks, emphasizing social influence, ease of use, and perceived value, while integrating trust building and food safety information to foster sustained use (Ray *et al.,* 2019; Shankar *et al.,* 2024).

Foster Positive Habit Formation and Satisfaction

Encourage Reordering of Healthy Favorites: Design favorites and order history

features that promote easy access to previously enjoyed healthier meals, reinforcing

positive consumption habits (Amoroso and Lim, 2017).

Ensure Reliability and Transparency:

Maintain consistent delivery times, order accuracy, straightforward payment processes,

and clear communication to build trust and reinforce satisfaction, which are critical

for repeat engagement (Lin *et al.,* 2024).

Promote Ethical Responsibility and Public Health

Educate Users and Collaborate with Health Organizations:

Integrate educational content and partner with public health bodies to raise awareness about

EE and healthy choices, aligning the platform's success with societal well-being.

Support Vulnerable Users with Behavioral Health Tools:

Offer optional access to self-regulation resources or mental health guidance within the app,

helping users manage EE and impulsivity beyond the ordering itself.

While impulsive buying drives initial and episodic revenues, minimizing the negative aspects of impulsivity with a smart design aligns business success with user well-being, regulatory trends, and long-term retention, creating a healthier application ecosystem for all stakeholders. Recommended practices represent a strategic balance between leveraging impulsive buying tendencies to drive business growth and incorporating safeguards that encourage mindful and healthy consumer behavior. This balance supports sustainable user retention, brand trust, and positive public health outcomes in an increasingly influential online food-delivery ecosystem.

Comparison with Prior Studies

The rapidly growing body of research on online food delivery (OFD) has been the subject of several recent comprehensive reviews and meta-analyses, notably those by Shankar *et al.* (2022, 2024) and Seghezzi *et al.* (2021). These foundational studies have shaped the academic understanding of OFD in terms of theoretical frameworks, research contexts, methodological approaches, and key constructs. This review builds on and extends prior syntheses in several important ways.

Shankar *et al.* (2022) conducted a comprehensive review of the online food delivery (OFD) landscape by mapping theoretical, methodological, and contextual developments in the field. Their study contributed to a conceptual

framework highlighting the antecedents, mediators, and consequences of OFD behavior. However, they paid limited attention to the emotional and psychological dimensions of consumer behavior. In contrast, the current study provides a more focused thematic analysis that explores underlying emotional triggers, such as hunger, impulsivity, and habit formation. This positions the current research in filling a critical gap by offering a psychologically grounded understanding of OFD behaviors.

Shankar *et al.* (2024) presented a meta-analysis that integrated various established models such as the UTAUT and brand relationship theories. They emphasized measurable predictors, such as performance expectancy, effort expectancy, and perceived value, as well as outcomes, such as satisfaction, trust, and loyalty. Although their work provides valuable insights into consumer intentions and technology adoption, it relies heavily on quantitative methods and established constructs. The present study uses qualitative thematic synthesis to unearth less-structured, emotionally driven behaviors, including mood-driven ordering, craving responses, and the role of instant gratification. These behavioral and emotional dimensions offer a fresh perspective that is not captured by standard adoption models.

Seghezzi *et al.* (2021) approached OFD from an operational perspective, modeling the economic viability of last-mile delivery using simulation techniques based on real-world data from Milan. Their research focused on platform-side concerns such as profitability, demand, and workforce management. While important for logistical strategy, this study does not consider consumer experience or decision-making processes. By shifting the lens from economic performance to consumer psychology, this study addresses a key gap in the literature by contributing new insights into how emotional states and behavioral patterns shape online food ordering decisions, especially in the post-pandemic digital food economy.

Limitations of the Review

Despite the systematic approach adopted in this review, a number of limitations need to be acknowledgement.

Search Strategy Constraints:

Each database's requirements and limits were considered when running the search phrases, either alone or in restricted combinations (Mengist *et al.,* 2020). This method may have limited the thoroughness of the literature search and excluded relevant studies that employed other terminologies or combinations, even if required for practical reasons. It is important to consider the potential gaps that may arise due to limitations in the search strategy when interpreting the results of this study (Williams et al., 2021).

Dependence on Quality of the Studies:

The dependability of an SLR relies heavily on the methodological soundness and thoroughness of the studies it includes (Siddaway et al., 2019). The conclusions reached in this review could be skewed if the current research on online meal delivery services has methodological flaws like small sample sizes, lack of transparency, or problems like p-hacking, HARKing (hypothesizing after results are known), or other questionable research practices .

Conclusion and Directions for Future Research

This review synthesises a decade of peer-reviewed empirical evidence to establish that consumer behaviour within online food delivery service platforms cannot be adequately explained by operational or technology-acceptance frameworks alone. The findings converge on three interdependent drivers — physiological hunger and its hedonic extension, emotion-driven decision-making, and app design as a behavioural stimulus — whose combined explanatory power exceeds that of any single theoretical tradition. In response to this convergence, this review proposes the HEA Framework (Hunger, Emotion, App Design) as an original integrative model for understanding ordering behaviour in OFDS contexts. The framework makes explicit a recursive relationship between the three constructs: hunger intensifies emotional vulnerability, emotional states lower self-regulatory capacity, and app design exploits both to drive ordering frequency and volume.

Directions for Future Research

Five directions for future empirical work emerge from the HEA Framework.

First, the relationships between the three HEA constructs require formal empirical testing. At the time of writing, no published study has tested hunger and emotional state simultaneously as co-antecedents of impulsive ordering behaviour within an OFDS context. Future studies employing experience sampling methods or ecological momentary assessment designs would be well-positioned to capture the dynamic interplay between hunger, mood, and app engagement in real ordering situations (Zenk et al., 2014).

Second, the role of hedonic hunger as a distinct construct separate from physiological hunger warrants dedicated scale development and validation in the OFDS context. The Power of Food Scale (Espel-Huynh et al., 2018) offers a foundation, but its adaptation to digital food environments, where visual cues are mediated through screen interfaces, has not been empirically examined.

Third, the moderating role of individual-level traits, particularly impulsivity and self-regulatory capacity, on the hunger-to-ordering and emotion-to-ordering pathways represents a significant gap. Existing studies confirm that impulsivity amplifies ordering behaviour (Bénard et al., 2019; Georgii et al., 2017), but the boundary conditions of this relationship including platform type, time of day, and prior ordering history remain untested.

Fourth, the HEA Framework has been developed primarily from studies conducted in Western and East Asian contexts. Its transferability to emerging market settings, including South Asia, Southeast Asia, and Sub-Saharan Africa, where OFDS adoption is accelerating but emotional and cultural drivers of food choice may differ substantially, has yet to be examined (Gupta et al., 2024).

Fifth, the ethical dimensions of app design as a behavioural stimulus demand empirical attention. The HEA Framework identifies app design as an active agent in shaping the emotional states and ordering decisions of users, raising questions about the responsibilities of platform operators toward vulnerable user groups, including those with impulsivity disorders, eating disorders, or poor self-regulatory capacity (Allah Pitchay et al., 2022; Portingale et al., 2023). Future research should develop and test ethical design guidelines that balance commercial objectives with orderer well-being.

Closing Statement

The HEA Framework does not seek to replace existing theoretical models of OFDS adoption and continuance. Rather, it complements them by directing attention inward toward the lived physiological and emotional states of the orderer at a moment when digital food platforms have become a primary interface between human hunger, emotion, and consumption. As OFDS continue to scale globally, frameworks that account for the full complexity of orderer experience will be essential to both the academic understanding and the responsible governance of this sector.

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