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Beyond the Doorstep: Food Delivery Platforms and the Restructuring of Population Eating Behavior

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Abstract

Digital food delivery platforms have restructured the food environment through which populations access daily meals, extending its geographic reach while altering the mix of options available within it. This paper develops an integrative conceptual account of how platform business models, algorithmic design, and market-structuring functions transform eating behavior in ways that carry implications for population health and health-system outcomes. Drawing on a synthesis of literature spanning food-environment mapping, platform choice architecture, individual dietary and weight outcomes, socioeconomic and geographic moderation, and health-system cost, the paper proposes a structural-mediation framework in which platform expansion alters food-access conditions, operationalized through structural-access, algorithmic-decision, and commercial-incentive mechanisms that differ in their resistance to correction. The synthesis further identifies socioeconomic position as a moderator that determines the direction, not merely the magnitude, of health effects: the same platform architecture is associated with worsened dietary and weight outcomes among lower-resource populations and improved outcomes among higher-resource populations, a divergence attributed conceptually to differences in the behavior that platform access displaces. Aggregated across a population, these individually divergent effects are linked in emerging quasi-experimental evidence to measurable increases in healthcare-related expenditure, occurring within a regulatory environment that has not yet extended established food-policy instruments to digital platforms. The paper concludes that platform-mediated eating behavior should be understood as a structurally produced, resource-contingent phenomenon rather than a uniformly harmful or beneficial one, with direct implications for population-health targeting, platform-design regulation, and the governance of digital food-access infrastructure. Limitations concerning geographic generalizability and the untested displacement mechanism are identified as priorities for future empirical inquiry.

Keywords: *digital food environment; food delivery platforms; choice architecture; dietary behavior; health-system costs; socioeconomic disparities; platform governance*

1. Introduction

Over the past decade, the manner in which populations across urban Asia and beyond obtain food has undergone a structural transformation. Where meal acquisition once required physical presence at a point of sale — a market stall, a restaurant counter, a home kitchen supplied through periodic grocery shopping — a substantial share of daily eating decisions is now mediated through a smartphone interface. Food delivery platforms have inserted themselves between the consumer and the meal, compressing the distance between impulse and consumption to a matter of minutes and a few taps. This shift has typically been analyzed as a story of convenience, logistics efficiency, or digital-platform competition. What has received comparatively little sustained attention is the possibility that this same shift constitutes a structural change in the food environment itself, with consequences that extend into dietary quality, chronic-disease risk exposure, and the eventual burden carried by health systems.

The real-world problem is therefore not simply that people now order food differently, but that the conditions under which dietary decisions are made have been reorganized by commercial actors whose primary design objectives are engagement, order frequency, and revenue — objectives that do not inherently align with nutritional adequacy or long-term health. Algorithmic recommendation systems surface options based on predicted appeal and conversion likelihood rather than nutritional composition. Promotional architecture — bundled discounts, minimum-order

thresholds, “frequently ordered together” prompts — nudges toward higher-calorie, higher-frequency ordering patterns. Menu curation on these platforms tends to favor categories that travel and photograph well, which are not systematically the categories associated with balanced diets. None of this is necessarily deliberate in a health-adverse sense; it is simply the ordinary logic of a commercial platform optimizing for engagement. But the aggregate behavioral effect, replicated across millions of daily transactions, plausibly amounts to a meaningful redirection of population-level eating patterns — one that has so far been examined mainly through a marketing or technology-adoption lens rather than as a determinant of health-relevant behavior with implications for healthcare systems and health-related business practice.

The scholarly problem follows directly from this observation. A substantial literature exists on digital platform economics, on consumer adoption of food-delivery applications, and, separately, on the social and psychological correlates of convenience food consumption. These bodies of work have developed largely in parallel. What remains underdeveloped is an integrative account that treats the platform itself — its business model, its algorithmic choice architecture, its market-structuring role — as an explanatory mechanism for a health-relevant behavioral outcome, and that follows the causal chain far enough to consider what this means for healthcare-system burden, health-related organizational practice, and policy response. Without such an account, food delivery platforms risk being treated by health researchers as a background convenience rather than as an active structural determinant of the food environment worthy of analysis in its own right, while business and technology researchers continue to evaluate platform performance largely in commercial rather than population-health terms.

This paper addresses that gap by developing a conceptual account of how food delivery platforms transform eating behavior in ways that carry consequences for population health and the systems that respond to it. In doing so, it examines how platform-mediated food access has altered the structural and environmental determinants of eating behavior relative to earlier, less mediated forms of food acquisition; it considers the specific behavioral mechanisms — convenience compression, algorithmic recommendation, and promotional pricing design — through which platforms exert influence over dietary decisions; and it traces the resulting implications for population health exposure, for the operational and strategic practice of health-related organizations, and for the policy instruments that might govern this rapidly expanding commercial space. Each of these threads speaks to a distinct but connected concern: the first establishes that something structural has changed in how food is accessed; the second explains the mechanism by which that structural change translates into altered individual behavior; and the third asks what follows once that altered behavior is aggregated across a population and sustained over time.

The issue carries weight beyond academic interest. Rates of diet-related chronic disease — including obesity, type 2 diabetes, and cardiometabolic conditions — remain a persistent concern for health systems across much of Asia and other rapidly platformizing economies, and the commercial food environment is widely recognized as one of the modifiable determinants of that burden. If food delivery platforms are indeed reshaping that environment at scale, then understanding the mechanisms involved is directly relevant to health-system planning, to the design of health-conscious platform policy, and to the strategic and organizational choices made by businesses operating at the intersection of technology and food provision. Equally, treating this as an exclusively technological or commercial phenomenon risks overlooking a determinant of health behavior that is expanding faster than the research base needed to evaluate it.

Accordingly, the argument developed across the remainder of this paper proceeds from structure to mechanism to consequence. It begins by locating food delivery platforms within the broader concept of the food environment, then examines the specific design features through which platforms shape dietary decision-making, and finally considers what these mechanisms imply — for individuals, for health-related organizations, and for the systems that must ultimately absorb the health consequences of population-level dietary change. The intention is not to indict a commercial technology, but to establish it as a legitimate and consequential object of health-relevant analysis, deserving of the same scrutiny historically applied to other determinants of the food environment.

2. Review of Related Literature

2.1 *The Changing Food Environment and Digital Food Access*

An emerging body of scholarship treats digital food delivery services not as an ancillary retail channel but as a formal component of the food environment, extending frameworks originally developed for physical settings — availability, accessibility, affordability, accommodation, and acceptability — into a digital register (Osaili et al., 2023; Keeble et al., 2022). This reclassification carries analytical weight: it positions delivery platforms as infrastructure through which food choice is structured, rather than as a neutral convenience layered atop an unchanged environment. The World Health Organization’s formal recognition of the digital food environment as a distinct workstream lends institutional support to this framing (Granheim et al., 2021), and several authors argue that platforms should be understood, and eventually governed, as active infrastructures for public health rather than passive commercial intermediaries (Caputo et al., 2025; Jia et al., 2024a).

The empirical literature converges on the finding that digital delivery substantially expands the geographic scope of the food environment. Estimates place the effective radius of accessible food outlets at several times that of a traditional walkable catchment — from roughly 1.6 kilometers to as much as 10 kilometers in some markets (Fernandez & Raine, 2021), with Canadian data showing delivery zones extending nearly 9.4 kilometers and yielding several hundred available restaurants per postal code (Brar & Minaker, 2021). Comparable expansion has been documented in Australian and Chinese urban contexts, where delivery platforms are described as forming a distinct “digital central service zone” that persists alongside, but is structurally different from, the conventional walkable food environment (Chen et al., 2026; Kong et al., 2024). This pattern is broadly consistent across study sites, suggesting the accessibility expansion is a general feature of platform-mediated food access rather than a market-specific anomaly.

Where the literature diverges is not on whether access has expanded, but on what has filled that expanded space. Multiple cross-sectional audits report a pronounced skew toward nutritionally poor offerings: roughly four-fifths of outlets on Australian platforms have been classified as “less healthy,” and a large majority of listed menu items in New Zealand were discretionary rather than core foods (Bennett et al., 2024; Mahawar et al., 2022). This imbalance has been characterized in the literature using the metaphor of a “digital” or “cyber” food swamp, in which unhealthy options numerically overwhelm healthier alternatives (Bennett et al., 2023; Zhang et al., 2024). Notably, this skew is not distributed evenly: several studies report that the least healthy outlet mixes are concentrated in areas of greater socioeconomic disadvantage and remoteness, and that this pattern holds across markedly different national contexts, from Australia to China (Bennett et al., 2024; Kong et al., 2025; Ye et al., 2026).

Comparable retail transformations in the Philippines show that platform-based competition and omnichannel integration can alter consumer expectations for convenience, assortment visibility, and access even outside food markets (Atento & Atento, 2026). A parallel pattern appears in Philippine pharmacy retail, where digital-first competition has similarly reframed accessibility and convenience as strategic dimensions of health-related service delivery (Atento & Atento, 2025).

Taken together, this theme establishes the structural precondition for the paper’s central argument: platforms have not merely digitized an existing food environment but have generated a new one, whose geographic reach exceeds physical retail while systematically overrepresenting nutritionally poor options. The methodological base here leans heavily on outlet-level audits and geospatial mapping rather than individual dietary measurement, a limitation the subsequent themes address by turning to behavioral and health-outcome evidence.

2.2 *Platform Design, Choice Architecture, and Dietary Decision-Making*

If the first theme establishes that the food environment itself has changed, this theme addresses the mechanism by which that changed environment is translated into individual dietary decisions. The literature identifies platform design — algorithmic recommendation, promotional structuring, and interface-level choice architecture — as the primary conduit through which this translation occurs.

Recommendation systems shape food choice both directly and through perceived value and trust: personalized suggestions increase purchase intention (Wang, Chen, & Kuang, 2025), and involving users in refining their own

recommendations substantially increases acceptance of those suggestions (Vandeputte et al., 2022). A tension recurs across this literature, however: systems optimized purely for user preference risk reinforcing existing unhealthy patterns, while those optimized for nutritional quality tend to reduce perceived variety and user acceptance (De Croon et al., 2023) — an unresolved design trade-off rather than a settled finding. Popularity cues such as “most popular” labels measurably increase demand (Bookwala et al., 2022), and audits find these labels are disproportionately attached to discretionary rather than healthier items (Wang, C., et al., 2021; Mahawar et al., 2022), meaning the platform’s own signals of social proof are not neutral with respect to dietary quality.

Promotional and pricing architecture shows a similar pattern. Value bundles and combination deals are significantly more likely to feature discretionary items than healthier ones, with odds ratios in the range of four-to-six across Australian and New Zealand platform audits (Wang, C., et al., 2021; Mahawar et al., 2022), and sales promotions have been directly linked to over-ordering behavior (Permasih et al., 2024). In the United Kingdom, outlets serving more deprived areas were found to offer a greater number of promotions, compounding the socioeconomic patterning already evident in Theme 1 (Huang et al., 2025).

Encouragingly, the same architecture that can encourage unhealthy consumption has been shown to work in the opposite direction under deliberate redesign. A randomized trial found that repositioning lower-impact menu items to appear first reduced the carbon footprint of average orders by roughly twelve percent while modestly improving nutritional content (Lohmann et al., 2024), although the same study noted that repeated exposure may allow users to adapt around the nudge over time. Calorie labelling within a delivery interface reduced calories ordered from certain outlet categories without affecting portion-size selection, and proportional pricing produced a genuinely paradoxical result — reducing the likelihood of choosing a larger beverage while simultaneously increasing total calories ordered from fast-food outlets (Finlay et al., 2023). This paradox is analytically important: it suggests that isolated design interventions can shift narrow behavioral margins without altering the broader trajectory of an order, a distinction the paper’s later analytical synthesis returns to.

Evidence from AI-enabled education likewise suggests that personalization can increase perceived relevance and engagement while raising equity, bias, and governance concerns, illustrating that algorithmic mediation is rarely behaviorally neutral (Rao et al., 2025). In another app-mediated service setting, pre-arrival personalization has been conceptualized as a mechanism for increasing convenience, perceived control, and functional fit, reinforcing the broader point that interface design can restructure the choice environment before consumption occurs (Benosa et al., 2026).

The literature is largely consistent in showing that platform design measurably shapes what and how much is ordered; where it is less settled is on the durability of pro-health nudges relative to the commercially dominant architecture of promotion and recommendation, which several sources describe as structurally biased toward discretionary consumption (Gupta et al., 2025; Morrison et al., 2026).

2.3 Platform-Mediated Eating, Dietary Quality, and Health Outcomes

This theme moves from mechanism to outcome, examining the accumulating evidence on the relationship between delivery-platform use and dietary quality, weight status, and related health indicators. The evidence base is substantial and geographically diverse, spanning at least ten countries, though it remains predominantly cross-sectional.

On dietary quality, the pattern is fairly consistent: frequent users of delivery platforms show measurably lower diet-quality scores than infrequent users, including higher intake of discretionary items and lower vegetable intake (Jin et al., 2025). A systematic review of over fifty studies found that the large majority of diet-related outcomes examined — weight gain, emotional eating, snacking, and a shift toward less healthy orders — were linked to app use (Jia et al., 2024b). Qualitative work reinforces this pattern from the user’s own perspective: frequent UK users reported that they did not use delivery services to obtain healthy food, despite recognizing that their typical orders were energy-dense (Keeble et al., 2022).

On weight status, the association with elevated body mass index and obesity risk appears across multiple independent samples, with relative risk or odds ratios generally in the range of 1.8 to 2.4 for frequent versus infrequent users (Cummins et al., 2024; Ko & Ha, 2024). A quasi-experimental study exploiting the staggered geographic rollout

of a delivery platform across Chinese cities is particularly notable for approaching causal inference more directly than the cross-sectional majority: it found that platform entry into a city was followed by an upward shift in the BMI distribution among urban young adults, with the effect attributed to increased consumption of energy-dense foods and reduced home meal preparation (Fang et al., 2026).

The literature is not unanimous, however, and the dissenting findings are analytically informative rather than merely noise. Several studies — in Indonesia, the UAE, and an earlier UK sample — found no significant association between delivery-app use and weight status, with the Indonesian study instead identifying emotional eating and general diet quality, rather than app-use frequency itself, as the stronger predictors of poor nutritional status (Wijasukmaya et al., 2026; Alneyadi & Alneyadi, 2023; Ramadan et al., 2024). This divergence suggests that platform use may function as a proxy for, or amplifier of, pre-existing behavioral and psychological risk factors rather than as an independent causal agent in every context — a distinction the paper treats carefully rather than collapsing into a single causal narrative. One Saudi study also found that students with higher BMI were more likely to select ostensibly healthier menu items, a result the original authors attribute to weight-management motivation or social-desirability effects rather than genuine dietary improvement (Alshahry & Alhazmi, 2026).

Adjacent Philippine evidence among dormitory medical students links snacking frequency and BMI with broader lifestyle and distress profiles, underscoring that food-related behaviors often operate within clusters of sleep, activity, screen-time, and psychosocial conditions rather than in isolation (Quinto et al., 2025). Similarly, a short digital sleep-diary intervention showed that self-monitoring alone did not produce a statistically superior improvement when structural constraints such as academic stress and caffeine use persisted, a useful parallel for interpreting the limits of purely interface-level behavior change (San Juan et al., 2026).

Overall, the weight of evidence supports an association between frequent platform use and both lower dietary quality and elevated obesity risk, while the presence of credible null findings and the near-total reliance on cross-sectional designs counsel against treating this relationship as uniformly causal across populations.

2.4 Socioeconomic and Contextual Variation in Platform-Mediated Eating

This theme establishes that platform-mediated eating is not a homogeneous phenomenon experienced identically across a population, but one that is patterned by socioeconomic position and geographic context in ways that carry equity implications.

Socioeconomic patterning is evident first in the type of digital food channel used: higher-income households are more likely to use online grocery delivery, while lower social-grade households are more likely to rely on takeaway delivery applications — channels with markedly different nutritional profiles (Cummins et al., 2024). The most methodologically compelling evidence of socioeconomic moderation comes from a Chinese study exploiting platform entry timing, which found that the same platform expansion increased overweight prevalence among low-income individuals while reducing it among high-income individuals, with opposite shifts also observed in fried-food consumption (Ding et al., 2026). This divergence indicates that the health consequence of platform access is not fixed but is conditioned by the resources and constraints an individual brings to that access — a finding that complicates any simple claim that platforms uniformly worsen or improve diet.

Geographic context shows a related but distinct pattern. Delivery activity and outlet coverage are consistently concentrated in urban centers across multiple national contexts, including China, Brazil, and the United Kingdom, reflecting the underlying logistics and demand density required to sustain platform operations (Wang, Z., & He, 2021; Da Costa et al., 2025; Keeble et al., 2021). However, urbanicity does not translate straightforwardly into advantage: Australian data show that while metropolitan areas host more total outlets, disadvantaged and remote areas are characterized by a less healthy outlet mix, and Brazilian data similarly show that healthier options are more common in denser, higher-development municipalities, leaving lower-development regions with both less coverage and a poorer nutritional mix (Bennett et al., 2024; Da Costa et al., 2025).

At a broader structural level, ASEAN evidence likewise shows that macroeconomic resources and labor participation translate into nutrition outcomes heterogeneously across countries, reinforcing the need to treat resource position as a moderator rather than a background variable (Quinto & Atento, 2025). Behavioral heterogeneity is also visible in digital-media use: among Filipino Generation Z students, passive social-media engagement varied with

introversion-related coping patterns, illustrating why platform exposure should not be treated as behaviorally uniform across users (Dancel et al., 2026).

The methodological base for this theme is more varied than the preceding two, combining survey-based socioeconomic analysis, geospatial outlet mapping, and a small number of quasi-experimental designs, and drawing on markets as different as India, the Philippines, Singapore, and Brazil (Pandey et al., 2021; Bohao et al., 2024). The consistent conclusion across this varied evidence base is that platform-mediated eating reproduces, and in some cases appears to compound, existing socioeconomic and geographic inequalities in food access — a finding directly relevant to any subsequent discussion of health-system burden, since the populations most exposed to the least healthy platform environments are frequently those with the fewest resources to absorb the resulting health consequences.

2.5 Health-System, Policy, and Business Implications of Platform-Mediated Eating Behavior

The final theme moves from individual and contextual evidence to the system level, examining what is known about regulatory response, healthcare-relevant costs, and the commercial logic underlying platform operation.

Formal regulation of delivery platforms remains scarce. A systematic mapping review identified only a small number of policies globally that explicitly address online food delivery, and concluded that the most immediately feasible regulatory step is extending existing food-labelling frameworks to cover digital platforms (Jia et al., 2024a). Where such extension has been attempted, results have been mixed: England's mandatory calorie-labelling regulation produced low and declining compliance among delivery-platform listings, with the lowest compliance concentrated in the most deprived areas, though the calorie content of items that were labelled did decrease modestly (Kalbus et al., 2025). A broader scoping review of policy and industry interventions — spanning labelling, fiscal measures, food-assistance programs, and digital nudges — found that effects were generally modest and context-specific, while industry-led design changes such as menu reordering and healthier defaults showed somewhat more encouraging results when actually implemented (Caputo et al., 2025).

Evidence linking platform expansion to healthcare-relevant costs is newer and more limited in geographic scope, drawn primarily from Chinese quasi-experimental studies, but is notable for approaching the causal chain from structural change to system burden more directly than most literature in this space. A difference-in-differences analysis matching national panel survey data to city-level platform entry found that platform expansion was followed by a measurable decline in self-rated health alongside a double-digit percentage increase in both total and out-of-pocket medical expenditure, with a smaller and more cautiously interpreted increase in chronic-disease prevalence (Tian et al., 2026). These effects were more pronounced among men and individuals without tertiary education, and were accompanied by poorer diet quality, reduced exercise, and increased smoking and drinking — suggesting platform entry may operate as one input among a cluster of co-occurring behavioral changes rather than as an isolated dietary effect. A related study found that low-income individuals experienced increased weight-related chronic-disease risk following platform entry into their area, while high-income individuals experienced a reduction, with children in low-income households also showing increased overweight risk — raising the possibility of an intergenerational dimension to this inequality (Ding et al., 2026).

Several sources locate the origin of these patterns partly in platform business models themselves. A case study of a major delivery platform's operations in Australia described marketing strategies directed at families, exclusivity arrangements with restaurant partners, and a pattern of accepting short-term losses to expand market share, alongside self-regulatory positioning that public health researchers characterize as insufficient given the scale of commercial influence involved (Bennett et al., 2025). Policy experts in New Zealand similarly concluded that existing regulatory frameworks were not designed with on-demand digital delivery in mind and identified expanded access to discretionary food, weak existing restrictions, and intensified personalized marketing as their central concerns (McKerchar et al., 2023; Duthie et al., 2023). Consumer-facing survey evidence offers some counterpoint: large majorities of surveyed young adults in at least one major Asian city expressed support for compulsory nutritional labelling and platform-based healthy-food zones, indicating a degree of public appetite for structural rather than purely voluntary intervention (Yang, 2025).

This system-level framing is consistent with conceptual work in healthcare analytics that treats clinical and business outcomes as interdependent and mediated by organizational decision quality, rather than as separate performance domains (Atento et al., 2025). Implementation evidence from Philippine hospital accreditation further

shows that favorable policy and quality objectives can still be constrained by staffing, budget, equipment, and managerial implementation conditions, cautioning against assuming that formal regulation automatically produces effective organizational response (Garcia & Atento, 2026).

Read together, this theme suggests that the health and cost consequences of platform-mediated eating are not confined to the individual level examined in Theme 3, but extend into measurable healthcare-system burden, and that the regulatory apparatus currently available to address this burden remains underdeveloped relative to the pace of platform expansion.

2.6 Synthesis of Literature

Across the five themes, the literature converges on a coherent structural narrative even though individual studies vary in design and geographic scope. First, digital delivery platforms are consistently documented as having expanded the geographic and infrastructural boundaries of the food environment well beyond the walkable radius that defined it historically (Fernandez & Raine, 2021; Brar & Minaker, 2021; Chen et al., 2026). Second, this expanded environment is not neutral in composition: multiple independent audits across different national contexts converge on the finding that discretionary, energy-dense offerings substantially outweigh healthier alternatives within it (Bennett et al., 2023, 2024; Mahawar et al., 2022; Zhang et al., 2024). Third, the mechanisms by which this skewed environment translates into individual behavior — algorithmic recommendation, popularity cues, and promotional bundling — are shown with reasonable consistency to favor discretionary consumption, even as isolated design interventions (menu repositioning, calorie labelling) demonstrate that the same architecture can be redirected toward healthier outcomes under deliberate redesign (Lohmann et al., 2024; Finlay et al., 2023). Fourth, the individual-level health literature broadly, though not unanimously, associates frequent platform use with lower dietary quality and elevated obesity risk, with the strongest and most methodologically direct evidence — the Chinese quasi-experimental studies exploiting staggered platform rollout — lending the overall pattern more causal credibility than the larger cross-sectional literature alone would provide (Fang et al., 2026; Jia et al., 2024b). Fifth, this pattern is not evenly distributed: socioeconomic position and geographic context repeatedly emerge as moderators rather than incidental correlates, with several studies showing that the same platform expansion can produce divergent health effects across income groups (Ding et al., 2026; Cummins et al., 2024). Finally, a smaller but growing body of system-level evidence connects platform expansion to measurable increases in medical expenditure and self-rated health decline, while documenting that regulatory frameworks have not kept pace with platform growth (Tian et al., 2026; Jia et al., 2024a).

Related digital-marketing evidence also distinguishes platform exposure from meaningful behavioral conversion: high online awareness can coexist with much lower active engagement, suggesting that visibility alone is an incomplete proxy for downstream behavior (Espelita et al., 2026). Public-health behavior research similarly shows that knowledge does not necessarily translate directly into practice when attitudes and enabling conditions intervene, supporting the broader synthesis here that exposure, decision processes, and behavior should be analytically separated (Temporada et al., 2025).

The overall architecture of the literature therefore supports a chain running from structural change in the food environment, through behaviorally consequential platform design, to individual dietary and weight outcomes, moderated by socioeconomic and geographic context, and terminating in measurable — if still emergent — health-system consequences.

2.7 Gaps in the Literature

Several limitations and unresolved questions recur across the reviewed literature. Methodologically, the individual-level health evidence remains overwhelmingly cross-sectional; causal inference is largely confined to a small number of Chinese quasi-experimental studies exploiting staggered platform rollout, and it is not yet established how well these findings generalize to markets with different regulatory environments, platform maturity, or food cultures (Fang et al., 2026; Tian et al., 2026; Ding et al., 2026). Relatedly, the null and mixed findings identified in Theme 3 — particularly the Indonesian and UAE studies — are not well integrated into the dominant narrative of the literature; it remains unclear whether these represent genuine contextual boundary conditions, measurement limitations, or confounding by unmeasured psychological factors such as emotional eating (Wijasukmaya et al., 2026; Alneyadi & Alneyadi, 2023).

Conceptually, the literature has developed largely along disciplinary lines that do not fully connect to one another: the food-environment and geospatial-mapping literature (Theme 1), the platform-design and behavioral-economics literature (Theme 2), and the health-outcomes literature (Theme 3) each cite one another only sparingly, and few sources attempt to trace the full mechanism from platform design feature through to health-system cost in a single integrated framework. The healthcare-cost and health-system literature identified in Theme 5 is newer, geographically narrow, and has not yet been extended to the wide range of national contexts covered by Themes 1 through 4, leaving open the question of whether the medical-expenditure effects documented in China generalize elsewhere.

The socioeconomic-moderation literature (Theme 4), while consistent in direction, has not been synthesized into a single explanatory account of why the same platform expansion produces divergent effects across income groups — the existing studies document the divergence without offering a well-developed theoretical mechanism for it. Finally, the regulatory and policy literature (Theme 5) is descriptive and evaluative rather than integrative: it catalogs the scarcity and limited effectiveness of existing interventions but does not yet connect this regulatory gap back to the specific platform-design mechanisms identified in Theme 2 in a way that could inform targeted intervention design.

2.8 Contribution of the Present Paper

The present paper addresses these gaps by developing an integrative conceptual account that connects the four bodies of literature reviewed above — food-environment restructuring, platform choice architecture, individual health outcomes, and system-level consequences — into a single explanatory chain, rather than treating them as parallel but disconnected literatures. In doing so, it offers a structural interpretation of platform-mediated eating behavior that positions the platform’s business model and design logic, rather than individual consumer choice alone, as the primary analytical unit through which health consequences should be understood.

The paper further contributes by explicitly foregrounding the socioeconomic and contextual moderation documented in Theme 4 as a central feature of the argument rather than a secondary qualification, and by drawing out the implications of the emergent healthcare-cost evidence in Theme 5 for health-related organizational and policy practice — a connection the existing literature has not yet made explicit. In doing so, the paper aims to reframe food delivery platforms from a topic situated primarily within marketing and technology-adoption research into a legitimate and consequential object of health-business analysis.

3. Methodology

This paper is developed as a conceptual, thematic literature synthesis — an integrative review that draws together and analytically connects existing scholarship on digital food delivery platforms, food-environment change, and health-relevant behavioral and system outcomes. It is not an empirical study in the sense of collecting new primary data, nor is it a formal systematic or scoping review in the methodological sense of that term; no PRISMA protocol, database-screening count, or inter-rater reliability procedure was applied. The label “conceptual and thematic review” is used here because it accurately describes the actual process undertaken: identification of a bounded set of literature themes, targeted retrieval of relevant scholarship within each theme, and interpretive synthesis across themes to construct an integrated conceptual argument.

Design and source orientation. The paper’s design followed a structured, theme-driven retrieval strategy rather than an exhaustive or database-specific search protocol. Five literature themes were established a priori, sequenced to move from foundational structural change (the reconfiguration of the food environment) through explanatory mechanism (platform design and choice architecture) to individual-level outcome (dietary quality and weight status), contextual moderation (socioeconomic and geographic variation), and finally system-level consequence (health-system cost and policy response). This sequencing reflects an underlying theoretical logic — food-environment theory, extended into the digital domain — rather than an arbitrary grouping of convenient topics.

Source-selection and inclusion logic. For each theme, two guide questions were formulated in a yes/no evidentiary format suitable for literature retrieval (e.g., “Does the literature support the classification of food delivery platforms as a component of the modern food environment?”). These questions were used to query Consensus, an academic literature-search platform drawing on Semantic Scholar, PubMed, Scopus, and preprint repositories, which returned peer-reviewed studies, systematic reviews, and a small number of preprints directly responsive to each

question. Inclusion was governed by direct relevance to the guide question and thematic fit; sources returned by the search tool that addressed the topic substantively were retained, while off-topic or tangential results were not incorporated into the synthesis. This is a targeted rather than exhaustive retrieval strategy: it is well suited to constructing a conceptual argument grounded in real, traceable literature, but it does not claim the completeness or reproducibility guarantees associated with a formal systematic review.

Thematic organization and analytical process. Within each theme, the retrieved literature was read for recurring patterns, points of convergence, and explicit disagreement, following the synthesis standard of identifying agreements, disagreements, methodological tendencies, and unresolved questions rather than merely cataloguing individual studies. Particular attention was paid to distinguishing correlational from quasi-experimental evidence, since several of the most analytically important findings in this literature — particularly regarding weight outcomes and healthcare expenditure — derive from studies exploiting staggered platform rollout as a natural experiment, which offer stronger grounds for causal interpretation than the more numerous cross-sectional studies. Null and contradictory findings identified within the literature were retained and discussed explicitly, rather than omitted, consistent with the evidence-integrity principle that association should not be overstated as consensus where genuine disagreement exists in the underlying studies.

Synthesis strategy. The cross-theme synthesis presented in this paper's Analytical Synthesis section (Section 4) was constructed by tracing a single explanatory chain across the five themes — from structural food-environment change, through platform-design mechanism, to individual health outcome, moderated by socioeconomic context, and terminating in system-level cost — rather than treating each theme as a self-contained body of evidence. This integrative approach is the paper's principal methodological contribution, since the reviewed literature itself, as noted in Section 2.7, has not yet connected these bodies of scholarship into a single framework.

Limitations. Several limitations follow directly from this design. First, because retrieval was guided by targeted questions rather than an exhaustive systematic search, some relevant literature may not have been captured, and the synthesis should not be read as a comprehensive census of all available evidence. Second, the literature itself is geographically uneven — quasi-experimental evidence on health and healthcare-cost outcomes is concentrated in Chinese studies, and the generalizability of these findings to other regulatory and market contexts is not yet established. Third, as a conceptual synthesis, this paper does not generate new primary evidence; its contribution lies in the integration and interpretation of existing findings rather than in the production of new empirical results. These limitations are addressed further, alongside their implications for future research, in the Discussion and Conclusion sections.

4. Analytical Synthesis / Conceptual Analysis and Discussion

The literature reviewed in Section 2 establishes four separate but empirically connected claims: that digital delivery has restructured the food environment, that platform design mechanisms translate this restructured environment into individual dietary decisions, that this translation is associated with measurable dietary and weight outcomes, and that these outcomes are unevenly distributed and carry system-level cost. Taken individually, each claim is well supported. Taken together, however, the literature has not yet articulated why these four layers connect as they do, nor has it specified the conditions under which the relationship strengthens, weakens, or reverses. This section develops that connective account.

4.1 A Structural-Mediation Framework

The recurring pattern across Themes 1 through 5 can be organized into a single explanatory sequence, which this paper terms a structural-mediation framework for platform-mediated eating behavior. The framework proposes that food delivery platforms do not influence eating behavior directly; rather, they alter the structural conditions of food access (Theme 1), which are then operationalized through design-level mechanisms internal to the platform (Theme 2), which in turn produce individual behavioral and health outcomes (Theme 3), the magnitude and direction of which are moderated by socioeconomic and geographic position (Theme 4), and which finally accumulate into system-level consequences that return, via cost and regulatory pressure, to reshape the structural conditions from which the sequence began (Theme 5).

This is not a linear pipeline but a partially recursive one. The healthcare-cost evidence and regulatory-gap findings identified in Theme 5 — rising medical expenditure following platform entry, and the near-absence of platforms from existing nutrition policy (Tian et al., 2026; Jia et al., 2024a) — indicate that the system-level consequences of platform-mediated eating are beginning to generate the pressure that could, in principle, feed back into platform design and governance. That this feedback loop remains largely inactive at present — reflected in low and declining calorie-labelling compliance even under mandatory regulation (Kalbus et al., 2025) — is itself an analytically significant finding: it suggests the structural-mediation sequence is currently operating in an open loop, where health and cost consequences accumulate without yet exerting corrective pressure on the platform-design layer that produces them.

4.2 The Mechanism Layer: A Typology of Platform Influence

The literature's design-level evidence (Theme 2) can be organized into three analytically distinct mechanism types, which together constitute the operative layer of the framework:

1. Structural-access mechanisms — the sheer expansion of reachable food options, which increases the probability that any given decision moment includes a discretionary option within it (Fernandez & Raine, 2021; Brar & Minaker, 2021).
2. Algorithmic-decision mechanisms — recommendation systems, popularity cues, and personalization, which do not expand choice so much as weight it, systematically raising the visibility and perceived desirability of discretionary items (Bookwala et al., 2022; Wang, C., et al., 2021).
3. Commercial-incentive mechanisms — promotional bundling, discount thresholds, and pricing design, which alter the marginal cost calculus of ordering more, or ordering less healthfully, at the point of transaction (Permasih et al., 2024; Mahawar et al., 2022).

Distinguishing these three mechanisms matters because they are not equally tractable to intervention, nor do they respond to the same corrective tools. The choice-architecture evidence in Theme 2 shows that structural-access effects and algorithmic-weighting effects can be substantially offset by redesigning the same interface layer that produced them — menu repositioning reduced both carbon-intensive and calorie-dense ordering simultaneously (Lohmann et al., 2024). Commercial-incentive mechanisms proved more resistant: calorie labelling shifted item-level calorie content only marginally, and proportional pricing produced a genuinely counterintuitive result, reducing large-beverage selection while increasing total calories ordered from fast-food outlets (Finlay et al., 2023). This divergence suggests a conceptual proposition worth stating explicitly:

Proposition 1: Interventions targeting the algorithmic-decision layer of platform design are more effective at improving aggregate dietary outcomes than interventions targeting price alone, because pricing interventions can be behaviorally compensated for elsewhere in the same transaction, whereas interface-level defaults are not subject to equivalent compensatory substitution.

This proposition is offered as a theoretically grounded inference from the pattern across Theme 2's studies, not as an empirically confirmed causal claim; it identifies a testable relationship for future evaluation rather than asserting a settled finding.

4.3 The Moderation Layer: Resource-Contingent Health Effects

The socioeconomic-moderation evidence in Theme 4 is not merely a qualifying footnote to the individual-outcome literature in Theme 3; it is arguably the most theoretically consequential finding in the reviewed literature, because it demonstrates that the same structural and mechanistic exposure produces divergent health outcomes depending on the resource position of the individual exposed to it. The Chinese quasi-experimental evidence showing that platform entry increased overweight prevalence among low-income individuals while reducing it among high-income individuals in the same market (Ding et al., 2026) cannot be explained by the structural-access or algorithmic-mechanism layers alone, since both groups faced the same platform architecture. The divergence instead points to a resource-contingent behavioral substitution dynamic: platform access appears to substitute for less healthy prior

behaviors among higher-resource individuals (for whom delivery may replace fast-food dining out or eliminate meal-preparation time pressure without displacing a healthier baseline) while substituting for more healthy prior behaviors among lower-resource individuals (for whom delivery may displace time- and resource-constrained but nutritionally adequate home preparation).

Proposition 2: The net dietary and health effect of platform access is not a fixed property of the platform but a function of the counterfactual behavior it displaces, which itself varies systematically by socioeconomic position.

This proposition reframes the apparent contradiction between studies finding uniformly negative health associations and those finding no association, or even income-stratified positive associations, not as a methodological inconsistency to be resolved by better measurement, but as an accurate reflection of a genuinely heterogeneous underlying process. It also explains why area-level findings — unhealthy outlet concentration in disadvantaged and remote areas (Bennett et al., 2024; Kong et al., 2025) — and individual-level findings — divergent health trajectories by income (Ding et al., 2026) — point in the same direction without being reducible to a single mechanism: the former concerns what is offered, the latter concerns what is displaced, and both operate simultaneously.

4.4 From Individual Outcome to System Consequence: A Boundary Condition on Causal Interpretation

The aggregation of individual-level effects into the system-level costs documented in Theme 5 — elevated medical expenditure and self-rated health decline following platform entry (Tian et al., 2026) — requires an important boundary condition on interpretation. The quasi-experimental studies underpinning this claim are geographically concentrated in a single national context with distinctive market structure, platform maturity, and health-financing arrangements. Extending the structural-mediation framework developed here to other contexts is therefore a conceptual extrapolation rather than an empirically demonstrated generalization. The framework should accordingly be read as specifying the mechanism by which platform expansion could plausibly generate healthcare-system cost in any sufficiently platform-saturated market, while treating the magnitude of that cost as an empirical question requiring context-specific investigation rather than an assumed constant.

4.5 An Integrative Pathway

Combining the two propositions above yields a single integrative pathway: platform expansion restructures the food environment and introduces mechanism-specific behavioral pressure (structural-access and algorithmic-weighting effects, moderately tractable to interface-level redesign, and commercial-incentive effects, more resistant to price-based correction); this pressure interacts with an individual's resource position to determine whether platform access displaces a healthier or less healthy counterfactual behavior; and the aggregate of these individually divergent outcomes accumulates, in sufficiently mature and platform-saturated markets, into measurable healthcare-system cost that has not yet generated a corrective regulatory response. This pathway does not require assuming that food delivery platforms are uniformly harmful — the framework explicitly accommodates the finding that platform access can improve outcomes for some populations — but it does establish that the health-relevant consequences of platform-mediated eating are structurally produced rather than incidental, and that they are currently accumulating within a governance vacuum. This positions the design and regulation of delivery platforms as a legitimate and largely unaddressed lever for health-system and health-related organizational practice, a point developed further in the following section.

5. Discussion and Implications

The structural-mediation framework developed in Section 4 carries implications that extend beyond the immediate literature review, touching on how health systems, healthcare-related organizations, and policy actors might understand and respond to a food environment that is being reshaped by commercial digital infrastructure rather than by the physical retail landscape those systems were originally designed around.

Implications for health systems and healthcare management. If platform expansion is indeed associated with measurable increases in medical expenditure and chronic-disease risk in sufficiently platform-saturated markets, as the emergent quasi-experimental evidence suggests (Tian et al., 2026; Ding et al., 2026), then health systems face a

determinant of population health that originates outside the conventional boundaries of clinical or even traditional public-health surveillance. Healthcare organizations engaged in population-health management, preventive-care planning, or chronic-disease risk stratification may need to treat local delivery-platform penetration and outlet composition as a relevant environmental exposure variable, comparable in principle to the way food-desert mapping has informed public-health planning around physical retail environments. The resource-contingent substitution dynamic identified in Section 4.3 also carries a direct operational implication: population-health interventions calibrated to a single assumed direction of effect (assuming platform access uniformly worsens diet) risk misallocating resources in contexts where higher-resource populations experience improved outcomes from the same platform access. Effective targeting therefore requires attention to the counterfactual behavior being displaced in a given population, not merely to platform-usage prevalence.

Implications for health policy. The regulatory-gap finding running through Theme 5 — that formal nutrition-related policy has largely failed to extend to digital delivery platforms (Jia et al., 2024a), and that even mandatory interventions such as England’s calorie-labelling regulation have achieved only partial and unevenly distributed compliance (Kalbus et al., 2025) — points to a policy instrument lag relative to the pace of platform-driven food-environment change. The mechanism typology developed in Section 4.2 offers a more targeted basis for policy design than a generic call for “healthier platforms”: it suggests that interface-level and algorithmic-design interventions (menu ordering, default recommendations) are likely to be more tractable and more resistant to behavioral compensation than price-based interventions alone, which the evidence suggests can be offset elsewhere in the same transaction. This distinction has direct relevance for regulators deciding where to concentrate scarce enforcement attention, and for platform operators considering voluntary design changes in advance of regulation.

Implications for health-related organizational and business practice. The commercial determinants identified in Theme 5 — market-expansion strategies, exclusivity arrangements, and self-regulatory positioning among platform operators (Bennett et al., 2025) — indicate that the health consequences examined throughout this paper are, in part, a byproduct of ordinary competitive strategy rather than an unintended externality alone. This has implications for how health-oriented organizations engage with platform operators: partnership or advocacy strategies premised on voluntary industry self-correction should be weighed against the finding that voluntary measures have thus far produced only modest and unevenly adopted change (Caputo et al., 2025). Conversely, the same evidence indicating consumer support for structural interventions such as compulsory labelling and platform-based healthy-food zones (Yang, 2025) suggests a viable constituency for organizations seeking to advocate for, or design around, more assertive platform governance.

Theoretical boundaries and limitations. Several boundaries constrain how far these implications can be extended. First, the causal core of the framework rests substantially on quasi-experimental evidence from a single national context; the extent to which the structural-mediation pathway generalizes to markets with different platform maturity, regulatory baselines, or food-financing structures remains an open empirical question rather than an established fact. Second, the resource-contingent substitution mechanism proposed in Section 4.3, while consistent with the available income-stratified evidence, has not been directly tested as a displacement mechanism at the individual level; the studies reviewed establish the divergent outcome, not the displaced-behavior pathway inferred to explain it. Third, this synthesis addresses dietary quality and weight-related outcomes as the primary health endpoints, in line with the bulk of the reviewed literature, and does not extend the framework to other health domains — such as the eating-disorder risk and mental-health associations noted in a subset of the reviewed studies (Pennisi et al., 2026) — that may operate through partially distinct mechanisms. These boundaries do not undermine the core structural-mediation argument but do define the scope within which its implications should be applied, and they identify specific directions — cross-national replication, direct testing of the displacement mechanism, and extension to non-weight health endpoints — for the future research agenda addressed in the following section.

6. Conclusions and Recommendations

This paper set out to examine how food delivery platforms, through their business models, algorithmic design, and market-structuring functions, transform eating behavior in ways that carry implications for population health and health-system outcomes. The conceptual synthesis developed across the preceding sections supports a structural-mediation account of this relationship: platform expansion reconfigures the food environment along both geographic and compositional lines, this reconfigured environment is operationalized through identifiable design mechanisms — structural-access, algorithmic-decision, and commercial-incentive layers — that differ in their tractability to

correction, and the resulting behavioral effects are neither uniform nor incidental but are systematically moderated by the socioeconomic and geographic position of the individuals exposed to them. Where the evidence base is strongest — the geospatial mapping of platform-driven food-environment change and the design-level evidence on algorithmic and promotional influence — the conclusions drawn here rest on a broad and geographically diverse literature. Where the evidence is thinner — the causal pathway from individual behavior to healthcare-system cost, and the displacement mechanism proposed to explain socioeconomic divergence in outcomes — the paper's claims are offered as conceptually grounded inferences rather than empirically confirmed findings, and are labeled as such throughout.

The central and most consequential insight is that platform-mediated eating behavior does not admit a single directional verdict: the same platform architecture that appears to worsen dietary and weight outcomes for lower-resource populations is associated with improved outcomes for higher-resource populations exposed to the identical design. This finding reframes the appropriate policy and organizational question away from whether food delivery platforms are beneficial or harmful in the aggregate, and toward which populations, under which resource conditions, experience which direction of effect — a more tractable and more actionable framing for both health-system planning and platform governance.

Several limitations, already discussed in Section 5, bear restating in proportion to their weight. The framework's causal core draws substantially on evidence from a single national context, and its generalizability to markets with different regulatory histories, platform maturity, or health-financing arrangements has not been established. The resource-contingent displacement mechanism proposed to explain socioeconomic divergence in health outcomes is a theoretically motivated inference from observed patterns, not a directly tested behavioral pathway. Nothing in this synthesis should be read as confirming these mechanisms empirically; the paper's contribution is the integration of an otherwise disconnected literature into a coherent and testable conceptual account, not the production of new primary evidence.

These limitations point directly to a future research agenda. Cross-national replication of the quasi-experimental designs that currently anchor the causal core of this framework would clarify how far its conclusions extend beyond the contexts in which they were first observed. Direct testing of the proposed displacement mechanism — for instance, through longitudinal designs capturing what platform-mediated orders actually replace in a given household's prior eating pattern — would substantially strengthen the moderation account offered in Section 4.3. Comparative evaluation of algorithmic-design interventions against price-based interventions, following the distinction proposed in Section 4.2, would provide a more direct empirical test of which regulatory or design levers are genuinely resistant to behavioral compensation.

In practical terms, the analysis suggests that organizations and policy actors concerned with the health consequences of platform-mediated eating would be better served by resource-differentiated approaches than by uniform interventions, by regulatory attention directed at interface-level and algorithmic design rather than price mechanisms alone, and by treating platform-governance gaps as an active and growing determinant of health-system burden rather than a peripheral concern. The evidence reviewed here indicates that this determinant is expanding faster than the governance and research infrastructure built to evaluate it — a gap this paper has sought to narrow conceptually, and one that empirical work informed by the propositions advanced here could narrow further.

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