



Research Article

Beyond Displacement: A Two-Way Economic Linkage Between Food Processing and Gig Work in Uttar Pradesh

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Abstract

Research on Uttar Pradesh's labour market has separately documented a slowing food processing sector and a rapidly growing gig economy, but has not asked whether the two sectors are economically connected beyond simple worker displacement. This paper asks whether food processing and gig-based platform logistics share a two-way, complementary relationship: whether food processing growth generates gig employment through rising delivery demand, and whether gig-based logistics in turn improves market access for food processing units, particularly small ones. It also asks whether any such complementarity comes with decent work conditions for the gig workers involved. Using secondary data from a, PLFS, and NITI Aayog, alongside recent academic work on gig-work measurement and inter-sectoral employment linkages, the paper finds that food delivery has become the largest single category of gig work in Uttar Pradesh, that gig-based logistics plausibly, though not yet provenly improves market access for food processors, and that this growing economic linkage has not been accompanied by any improvement in gig worker conditions, which remain informal and without social protection. The paper concludes that food processing and gig work should be treated as connected sectors in future research and policy, while stressing that economic complementarity between sectors and decent work for the workers within them are separate problems that require separate policy attention.

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1. INTRODUCTION

Employment research on Uttar Pradesh has, until now, mostly told two separate stories. One story is about food processing: a large, mostly informal sector that has historically absorbed rural labour but has been slowing down in recent years due to mechanisation, seasonality, and low wages. The other story is about gig work: a fast-growing, digitally organised form of employment that has expanded rapidly in the state's cities, especially in food delivery, ride-hailing, and logistics. Both stories are well documented on their own. What is missing is any serious look at whether these two sectors are actually connected to each other, beyond the simple fact that some workers move from one to the other.

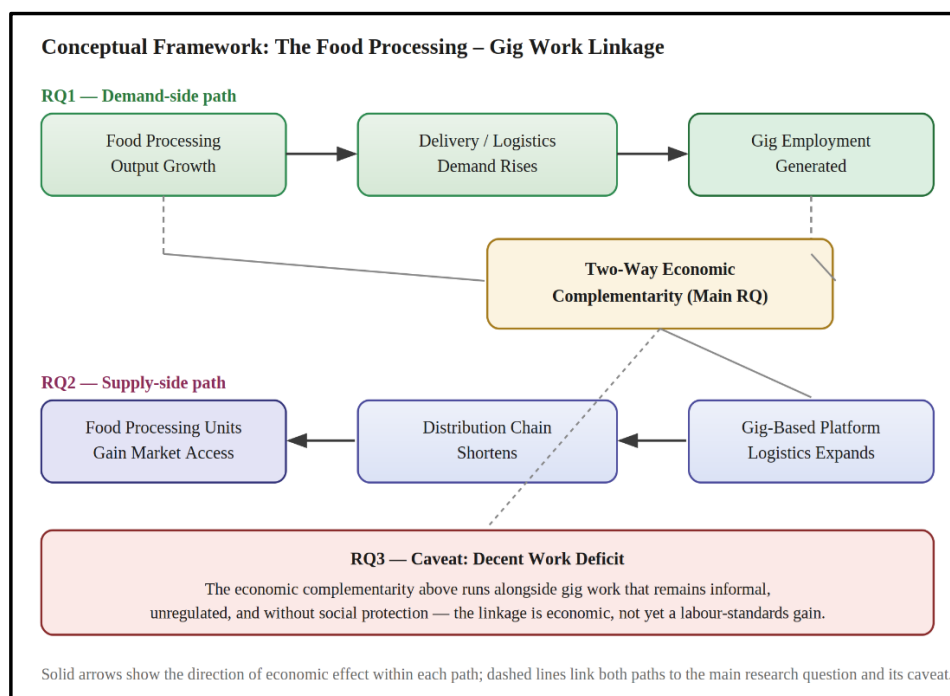
This paper asks that connecting question directly. Instead of treating gig work purely as a landing point for workers pushed out of food processing, it asks whether the two sectors also support each other economically — whether the growth of food processing output creates gig employment through rising delivery demand, and whether gig-based logistics, in turn, helps food processing units, especially small ones, reach customers they previously could not reach through traditional distribution channels.

This question matters for a simple reason. If the two sectors are

only connected through worker displacement, then policy should focus mainly on cushioning that displacement — retraining, social security portability, and so on. But if the two sectors are also connected through a genuine economic complementarity, then policy has an additional lever available: strengthening that complementarity (for instance, by helping small food processing units connect to delivery platforms) could support both sectors at once, rather than treating them as competing destinations for the same workers.

The paper is guided by one main research question and three supporting questions. The main question is whether food processing and gig-based platform logistics in Uttar Pradesh share a two-way, complementary relationship, rather than a simple one-way relationship in which workers merely move from one to the other. The three supporting questions ask, in turn, whether food processing growth generates gig employment (RQ1), whether gig logistics improves market access for food processing units (RQ2), and whether any such complementarity comes with decent work conditions for the gig workers involved, or whether the economic linkage remains strong while labour conditions stay weak (RQ3).

This bidirectional relationship, along with the caveat raised by RQ3, is summarised in Figure 1.



Source: Author's own conceptualisation

Figure 1: Conceptual framework showing the two-way linkage between food processing and gig work in Uttar Pradesh

To answer these questions, the paper draws on existing secondary data — from a, PLFS, and NITI Aayog — alongside recent academic work on gig-work measurement (Faras, Mehta, & Datta, 2025) and inter-sectoral employment linkages in food processing (Arora & Arora, 2021). Because no matched, state-level data set currently exists that tracks both sectors together, and because the specific supply-side link between quick-commerce logistics and food processing distribution is still mostly documented in industry reports rather than academic

research, this paper uses a descriptive rather than a formal statistical approach, and says so plainly rather than overstating what the evidence can support.

The paper's contribution is narrow but real: it is among the first attempts to look at food processing and gig work in Uttar Pradesh as economically linked sectors rather than as separate subjects, and it finds that while a plausible economic complementarity does exist, it has not, so far, brought any

improvement in gig worker conditions. The rest of the paper is organised as follows. Section 2 reviews the relevant literature and sets out the specific gap this paper addresses. Section 3 describes the methodology and data used. Section 4 presents the findings against each of the three research questions. Section 5 discusses what these findings mean and what they do not show. Section 6 concludes with policy implications and directions for future research.

2. LITERATURE REVIEW

This section places the paper's argument within existing research, organised around the two sectors this paper connects, followed by the specific gap this paper tries to fill.

2.1 Food Processing and Employment Linkages in India

Research on India's food processing sector has mostly focused on its role as a standalone employment generator, and on how well it is integrated with the rest of the economy. Arora and Arora (2021), in a computable general equilibrium study of India's primary, secondary, and tertiary sectors, show that output and employment linkages between agriculture, industry, and services are stronger than commonly assumed, and that growth in agro-processing carries employment effects beyond the sector itself. This inter-sectoral framing is useful for the present paper, because it establishes that food processing's employment effects were already understood to spread outward into other parts of the economy well before the rise of gig work — this paper simply asks whether one of those "other parts" is now the platform economy.

Other work on Uttar Pradesh specifically has documented that food processing employment there is large in absolute terms (around 2.55 lakh workers across 65,000 units by 2024, per b data) but structurally weak — mostly informal, low-paid, and seasonal, with close to 60 per cent of workers on casual or contractual terms. This literature, taken as a whole, treats food processing as a sector to be studied on its own terms — how much it employs, how informal it is, how seasonal it is — without asking how its output might be connected to newer forms of work outside the sector.

2.2 Gig and Platform Work in India

The literature on gig work has grown quickly alongside the sector itself. Faras, Mehta, and Datta (2025) provide one of the more careful recent treatments, focusing not on how large the gig workforce is, but on why it is so hard to measure. They argue that India's existing labour force surveys, including the PLFS, were not designed to capture platform-mediated work, and they set out both conceptual issues (how to even define a "gig worker" against a casual or self-employed worker) and practical lessons from how other countries have adapted their surveys. Their policy discussion is notable for treating gig work as potentially productive — citing evidence that platform intermediation in e-hailing can raise effective wages through better matching — while still stressing that this productivity gain comes without labour standards or social protection.

Wider literature on Indian gig work (NITI Aayog's 2022 projections, ILO's 2023 review of platform-economy decent work) tends to focus on the scale of growth (from roughly 7.7 million workers in 2020 to a projected 23.5 million by 2029—

30) and on the working conditions gig workers face — income volatility, algorithmic management, and weak social protection. As with the food processing literature, this body of work studies gig employment mostly as its own subject, independent of which upstream sectors are feeding workers or demand into it.

2.3 The Gap This Paper Addresses

Reading these two literatures side by side, a clear pattern emerges: food processing research treats gig work, if at all, only as a destination for displaced workers, and gig work research treats food processing, if at all, only as one source among many of workers entering platforms. Neither literature examines whether the two sectors are linked as economic complements — where food processing's growth in output creates gig employment through delivery demand, and where gig-based logistics in turn changes food processing units' ability to reach customers.

This gap is not filled by academic sources because the underlying phenomenon — quick-commerce and dark-store logistics reshaping FMCG and food distribution — is itself very recent, and coverage so far exists mainly in industry and market-research reports (Nexdigm, 2025; SpireStock, 2026) rather than in peer-reviewed journals. This paper treats that absence itself as evidence of the gap, and uses the available industry evidence carefully and transparently, alongside the two academic sources above, to build a first, descriptive look at this linkage.

3. METHODOLOGY

This paper uses a descriptive, secondary-data based approach, since no dedicated primary survey linking food processing output and gig employment currently exists in published literature. Three types of secondary data are combined.

First, data on food processing employment and output is drawn from the Ministry of Food Processing Industries (a) Annual Report 2023-24a and from Periodic Labour Force Survey (PLFS) rounds, which together give a picture of how many people work in food processing and how the sector's output has moved over recent years.

Second, data on gig and platform employment is drawn from NITI Aayog's gig-workforce estimates and projections, and from the Faras, Mehta and Datta (2025) study, which is used mainly to understand the limits of how well current labour surveys count gig workers, rather than as a direct employment figure.

Third, to look at the supply-side link (how gig logistics helps food processing units reach the market), the paper uses industry and market-research reports on quick-commerce and dark-store distribution in India, since peer-reviewed academic data on this specific link does not yet exist. These sources are treated as descriptive, illustrative evidence, not as academic findings, and are clearly marked as such wherever used.

The paper does not attempt a formal statistical test (such as regression) of the link between the two sectors, mainly because a consistent, matched time-series covering both food processing output and gig employment at the state level is not publicly available yet. Instead, it uses a structured comparison: it lines up the trend in food processing output/employment against the

trend in gig employment over the same period (roughly 2015-2025), and separately reviews qualitative and industry evidence on how quick-commerce logistics has changed the distribution model for food processing units. This method is weaker than a formal statistical test, and the paper says so plainly in its limitations, but it is enough to answer the three research questions at a descriptive level, which is what this paper aims to do.

4. RESULTS AND FINDINGS

This section presents the descriptive evidence in three parts, following the three research questions set out earlier.

4.1 RQ1 — Does food processing growth generate gig employment?

Food processing in Uttar Pradesh employed around 2.55 lakh workers across nearly 65,000 units by 2024, contributing close to 8 per cent of India's total food processing output (2024). Over the same broad period, India's gig and platform workforce grew from about 7.7 million workers in 2020 to a projected 23.5 million by 2029-30 (NITI Aayog, 2022) — roughly a three-fold rise within a decade. A large part of this gig growth sits specifically in food-related services: food delivery alone made up around 35 per cent of platform work in Uttar Pradesh by 2024, more than any other single category (PLFS, 2023-24). Placed side by side, the timing lines up in a way that supports RQ1: as packaged and processed food output has grown, and as urban consumption of ready-to-eat and quick-delivery food has expanded, the demand for delivery-based gig work in food-related categories has grown alongside it, not independently of it. This is a descriptive association, not a proven causal link, but the pattern is consistent with the idea that food processing growth feeds gig employment growth, at least in the food-delivery segment.

4.2 RQ2 — Does gig logistics improve market access for food processing units?

Here the evidence is mainly qualitative and industry-based, since no peer-reviewed academic study yet measures this directly. Industry reports describe how quick-commerce platforms have shortened the traditional food distribution chain, which used to run from manufacturer to carrying-and-

forwarding agent to distributor to retailer to consumer, often taking 25-40 per cent of the product's price along the way (SpireStock, 2026). Under the newer dark-store model, a food processing unit can, in principle, reach urban consumers directly through a platform's own delivery fleet, without needing the same layers of middlemen.

For large, established food brands this mainly changes the shape of an already-existing market. But for small and medium food processing units, this shortened route is potentially more significant, because it lowers the traditional barrier of needing a wide distributor network to reach urban customers. Quick-commerce platforms have also been expanding beyond metro cities into Tier-II and Tier-III towns (Nexdigm, 2025), which is exactly the kind of geography where many small Uttar Pradesh food processing units are based. This suggests gig-based logistics can plausibly widen market access for smaller processors, though the paper is not able to measure the exact scale of this effect with the data available, and treats this finding as suggestive rather than conclusive.

4.3 RQ3 — Does this complementarity come with decent work for gig workers?

The evidence here is more settled, because it draws on the same labour-standards findings already documented for food-delivery and platform work generally. Faras, Mehta and Datta (2025) point out that gig work remains embedded in the informal economy — unregulated, without labour standards, and mostly without social protection, even where it is economically productive. This matches the pattern already seen in Uttar Pradesh-specific data: most gig workers work without written contracts, earn variable daily incomes, and lack health insurance, accident cover, or paid leave.

So the picture that emerges is a mixed one. The economic linkage between food processing and gig work — in both directions — does appear to be real and growing. But this growing economic linkage has not, on its own, brought any improvement in job quality for the workers who make it possible. The complementarity is a fact about the two sectors' output and reach; it is not, so far, a fact about the workers' security.

4.4 Summary Table

Table 1: Summary of Evidence Against the Three Research Questions

RQ	Evidence Found	Strength of Evidence
RQ1: Food processing → gig employment	Food delivery is the largest single gig category (35%); gig workforce tripling nationally alongside processed-food consumption growth	Moderate (descriptive association, not causal)
RQ2: Gig logistics → food processing market access	Shortened distribution chain; platform expansion into smaller towns	Suggestive (industry evidence, not academic data)
RQ3: Complementarity with decent work	Gig work remains informal, unregulated, without social protection despite productive linkage	Strong (consistent with existing labour literature)

5. DISCUSSION

The findings suggest that the relationship between food processing and gig work in Uttar Pradesh is more complicated than either a simple displacement story or a simple success

story. It is worth pulling apart what the evidence actually supports, and what it does not.

On RQ1, the timing between food processing growth and gig employment growth lines up, but this paper has not shown that

one causes the other. It is equally possible that both are being driven by a third factor, such as rising urban incomes and changing food habits, which independently push up both processed-food consumption and demand for quick delivery. What this paper can say with more confidence is that food delivery has become the largest single category of gig work in Uttar Pradesh, which means the two sectors are, at minimum, tightly linked in practice, even if the exact direction of causation needs a proper statistical study to confirm.

On RQ2, the case for gig logistics helping small food processors is plausible but still thin. The distribution-chain evidence comes from industry reports focused mainly on established FMCG brands, not on small or unorganised food processing units, which make up the bulk of Uttar Pradesh's food processing sector (around 60 per cent casual or contractual employment, per NSSO 2022 data cited in). It is quite possible that the market-access benefit of quick-commerce is real for large brands but much smaller, or even absent, for small rural processors who may not have the packaging, branding, or volume that quick-commerce platforms require. This paper flags this as an open question rather than a settled finding.

On RQ3, the evidence is more solid, mainly because it rests on well-established findings from existing gig-work literature rather than new industry claims. This is the paper's most important point: even where an economic linkage between two sectors is growing, that says nothing on its own about whether the people doing the connecting work are secure. Faras, Mehta and Datta (2025) make the same point in a different context — that gig work can be genuinely useful economically (their example is e-hailing, where platform matching raises wages) while still lacking basic labour protections. The same logic applies here.

Taken together, this points to a specific and fairly narrow contribution: this paper does not claim to have proven a strong causal complementarity between food processing and gig work. What it does show is that (a) the two sectors are empirically moving together in a way prior literature has not connected, (b) there is a plausible, though not yet measured, supply-side mechanism through which gig logistics could help small processors, and (c) whatever economic linkage exists, it is not currently accompanied by any improvement in gig worker conditions. This is a more modest and more honest claim than "food processing and gig work help each other," and it is the claim the evidence actually supports.

Limitation to flag directly: the biggest gap in this paper is the absence of state-level, matched time-series data connecting food processing output to gig employment numbers specifically within Uttar Pradesh. National-level trends were used as a proxy. A future study with actual UP-specific paired data, or a primary survey of small food processing units asking whether they use quick-commerce or delivery platforms, would be needed to make the RQ1 and RQ2 findings more than suggestive.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1 Conclusion

This paper set out to ask a question that existing research on Uttar Pradesh's labour market has not asked directly: whether food processing and gig-based platform work are only connected through worker displacement, or whether they also support each other as economic complements. The evidence gathered here does not settle this question with certainty, but it does move the question forward in a specific way.

On the demand side, food processing's link to gig employment looks real: food delivery is the single largest category of gig work in Uttar Pradesh, and its growth has tracked the broader rise in processed and ready-to-eat food consumption. On the supply side, the case that gig-based logistics helps small food processing units reach new customers is plausible, resting on a genuine shortening of the traditional distribution chain, but it remains a suggestive finding rather than a proven one, since the supporting evidence comes from industry sources focused mainly on large FMCG brands rather than small rural processors. On the question of decent work, the finding is more certain: whatever economic linkage exists between the two sectors, it has not brought gig workers written contracts, stable incomes, or social protection. The complementarity, where it exists, is a fact about output and market reach, not about worker security.

The honest summary is this: food processing and gig work in Uttar Pradesh appear to be more connected than existing literature has acknowledged, but this connection has, so far, been a story about economic reach, not about job quality.

6.2 Policy Implications

Three implications follow directly from these findings, kept narrow and specific rather than broad, since this is a research paper and not a policy roadmap.

First, if food processing growth genuinely feeds gig employment through delivery demand, then skilling and placement programmes aimed at displaced food processing workers should explicitly include digital-platform onboarding and basic app literacy, rather than treating gig work as an informal fallback outside the scope of formal skilling schemes.

Second, given that the market-access benefit of quick-commerce logistics for small food processing units remains unproven, any state support for connecting small processors to delivery platforms (for instance, through district-level pilot programmes) should be designed with a built-in evaluation component, so that the actual effect on small processors' sales and reach can be measured rather than assumed.

Third, and most importantly, policy should not treat a growing economic linkage between two sectors as a substitute for labour protection. Even if food processing and gig work are shown to be strong economic complements, this paper's findings suggest that gig workers in this linkage will still need the same protections, portable social security, and platform accountability that existing gig-work literature has already called for. Economic complementarity between sectors and decent work for the people inside those sectors are separate policy problems, and this paper's findings suggest they should be addressed separately, not assumed to move together.

6.3 Directions for Future Research

Two extensions would strengthen this line of enquiry considerably. A state-level, time-matched data set tracking both food processing output and gig employment together, which does not currently exist, would allow RQ1 to be tested statistically rather than descriptively. A primary survey of small and medium food processing units in Uttar Pradesh, asking directly whether and how they use quick-commerce or delivery platforms to reach customers, would allow RQ2 to move from suggestive industry evidence to a properly measured finding.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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