ISSN 2348-3156 (Print)
International Journal of Social Science and Humanities Research ISSN 2348-3164 (online)
Vol. 14, Issue 4, pp: (401-408), Month: October - December 2026, Available at: www.researchpublish.com

THE SUSTAINABILITY CRISIS FACING MALAYSIA'S FOOD DELIVERY GIG ECONOMY: WILL AI AND ROBOTS SAVE THE INDUSTRY OR DESTROY IT?

Dr. Venkatesh Karanam[1], Dr. Shankar Nagalingam[2], Dr. Chong Kuan Git[3], Dr. P. Ravindran Pathmanathan[4], Dr. Noor Azliza Zainal Abidin[5], Dr. Louis Adaikalam[6]

DOI: https://doi.org/10.5281/zenodo.24050013

Published Date: 04-November-2026

Abstract: **Malaysia's food delivery gig economy has become an important part of urban consumption, restaurant commerce and flexible work. Yet the sector faces a multidimensional sustainability challenge: rider earnings and protection, road safety, platform profitability, restaurant margins, packaging waste, transport emissions and growing expectations for rapid, low-cost delivery. Artificial intelligence (AI), automated dispatch and delivery robots are often presented as solutions to operational inefficiency, but they may also intensify algorithmic control, concentrate market power and displace workers. This conceptual review examines whether AI and robotics can make Malaysia's food delivery industry more sustainable or deepen its existing vulnerabilities. It draws on Malaysian research on rider safety and platform work, the Gig Workers Act 2025 and its 2026 implementation, social protection arrangements, and scholarship on environmental impacts of third-party delivery. The paper distinguishes AI-assisted optimisation from physical automation and argues that these technologies have different effects on labour, costs and environmental performance. AI can improve batching, routing, demand forecasting, food-waste management and transparency if deployed responsibly; robots may be useful in controlled environments but face constraints involving cost, accessibility, weather, traffic, public space and last-mile handover. The paper proposes a five-pillar sustainability framework covering economic viability, decent work, safety, environmental performance and accountable technology governance. It concludes that technology alone cannot rescue the industry. Sustainable outcomes require fair platform rules, effective enforcement of worker protections, safer delivery incentives, lower-impact packaging, cleaner vehicles, transparent environmental measurement and worker participation in automation decisions.**

Keywords: **Malaysia; food delivery; gig economy; p-hailing; sustainability; artificial intelligence; delivery robots; platform work; rider safety; environmental impact.**

I. INTRODUCTION

Online food delivery has changed the relationship between restaurants, consumers and urban transport. Mobile platforms allow customers to browse menus, compare prices, place orders and receive meals without travelling to restaurants. For restaurants, platforms can provide access to a wider customer base and additional sales channels. For riders, the sector offers relatively accessible income opportunities and flexible working arrangements. These advantages, however, coexist with questions about the long-term sustainability of the business model.

In Malaysia, food delivery commonly forms part of the broader p-hailing economy, in which motorcycle riders deliver food, groceries and parcels through digital platforms. The growth of these services has created a visible layer of urban work, but the sector is exposed to volatile demand, promotional competition, platform commissions, fuel and maintenance costs, road risks and uncertainty over social protection. Research on Malaysian riders has documented occupational hazards, crash exposure and the influence of time pressure on road behaviour (Zulkifly et al., 2023; Rusli et al., 2022; Rusli et al., 2025).

At the same time, the industry is increasingly shaped by AI and automation. Platforms use algorithmic systems to forecast demand, allocate orders, estimate delivery times, recommend routes, calculate incentives and personalise customer offers. Physical automation—including sidewalk delivery robots, autonomous vehicles, drones and automated fulfilment systems—offers a further possibility. In principle, robots could reduce the marginal cost of some deliveries and limit exposure to road hazards. In practice, their deployment depends on operating environments, regulations, capital investment, reliability, public acceptance and the economics of the final handover.

The central question is therefore not whether technology can make delivery faster. It is whether it can make the entire system economically viable, socially fair and environmentally responsible. This paper argues that AI and robots may improve selected operational functions, but they will not resolve structural weaknesses unless technology is governed within a wider sustainability strategy. The analysis focuses on Malaysia and distinguishes documented local conditions from emerging technological possibilities that have not yet been established at national scale.

II. UNDERSTANDING SUSTAINABILITY IN FOOD DELIVERY

Sustainability in food delivery should be understood through the triple-bottom-line perspective: economic, social and environmental performance. Chan et al. (2023/2025) review third-party food delivery operations using this framework and identify gaps in understanding restaurant decisions, environmental performance and multidimensional sustainability. This perspective is useful because a delivery system can be commercially successful while transferring costs to workers, restaurants, communities or the environment.

A. Economic sustainability

Economic sustainability concerns whether platforms, restaurants and riders can maintain viable operations over time. Platforms must balance customer acquisition, discounts, technology costs, logistics and commissions. Restaurants must account for platform charges, packaging, order preparation and the risk of receiving low-margin orders. Riders must earn enough to cover fuel or electricity, vehicle depreciation, maintenance, mobile data, insurance and unpaid waiting time. A business model that relies on persistently low prices and the transfer of operating risks to riders may generate short-term growth but undermine long-term stability.

B. Social sustainability

Social sustainability concerns fair remuneration, predictable rules, worker voice, occupational safety, social protection and access to dispute resolution. Flexibility is valuable, but it should not be used to justify opaque pay calculations, unilateral account deactivation or unsafe delivery targets. The social dimension also includes customer access, affordability, restaurant livelihoods and the effects of platform concentration on local businesses.

C. Environmental sustainability

Environmental performance includes motorcycle fuel use, electricity consumption, vehicle and battery life cycles, packaging, food waste, traffic congestion and delivery density. The environmental impact of an individual order depends on distance, vehicle type, route efficiency, order consolidation, packaging choices, food waste and the energy mix. A fast delivery promise can increase emissions if it encourages single-order trips, dispersed dispatch or unnecessary packaging. Conversely, batching, efficient routing, reusable containers and low-emission vehicles may reduce impacts when implemented carefully.

These dimensions are interdependent. Lower delivery prices can increase demand but squeeze restaurant and rider margins. Faster delivery can improve customer satisfaction but encourage risky riding. Automation may lower some labour costs while increasing capital, energy and electronic-waste burdens. Sustainability therefore requires system-level evaluation rather than a narrow focus on delivery speed or cost per order.

III. THE STRUCTURAL PRESSURES FACING MALAYSIA'S P-HAILING SECTOR

The Malaysian food delivery model relies heavily on motorcycle-based last-mile work. This arrangement is flexible and geographically adaptable, but riders bear significant exposure to traffic, weather, vehicle costs and fluctuating demand.

A 2022 Malaysian study of 225 food delivery riders found that 93 respondents (41 per cent) reported having experienced at least one crash during delivery. The study associated higher crash odds with being younger, working full-time, having more than two years of delivery experience, travelling more than 100 kilometres per day and certain prior work histories (Rusli et al., 2022). These findings should be interpreted within the study's sample and design rather than treated as a national crash rate.

A 2025 observational study in Shah Alam examined 4,950 motorcycle riders at six signalised intersections, with 52.3 per cent identified as food delivery riders. It found that food delivery riders had higher odds of mobile-phone use while stopped and while moving than non-delivery riders, although some other risky behaviours did not differ significantly (Rusli et al., 2025). The findings point to a critical operational tension: delivery platforms depend on digital instructions and time-sensitive work, while riders must interact with apps in a demanding traffic environment.

Occupational health extends beyond crashes. Malaysian research has identified exposure to unsafe road conditions, reckless road users, heat, dust, smoke, unpredictable weather, vibration, ergonomic strain and psychosocial hazards among food and parcel delivery riders (Zulkifly et al., 2023). A study of riders in eastern Peninsular Malaysia also reported medium ergonomic risk of work-related musculoskeletal disorders, highlighting the need to consider posture, motorcycle design and repetitive work (2025 study).

Income sustainability is similarly complex. Rider earnings depend on order volume, distance, incentives, waiting time, platform commission structures and operating expenses. Periods of low demand can leave riders waiting without compensation, while peak-hour incentives may encourage longer working hours. Platform competition through discounts can benefit consumers in the short term but may make it harder for restaurants and riders to capture a fair share of the transaction value.

The market also raises questions about information asymmetry and platform power. A 2026 analysis by the Institute of Strategic and International Studies (ISIS) Malaysia argues that opaque algorithms, unilateral deactivation and concentrated platform markets can constrain worker choice and weaken bargaining power. Its estimates of gig-worker participation and platform concentration are analytical estimates, not an official census, and should be treated accordingly (ISIS Malaysia, 2026). These structural conditions matter because AI can either reduce information gaps or reinforce them.

IV. THE REGULATORY CONTEXT: THE GIG WORKERS ACT 2025

Malaysia's Gig Workers Act 2025 (Act 872) represents an important development in the governance of platform work. The Act provides for the protection of gig-worker rights, duties of contracting entities, regulation of service-agreement terms, dispute-resolution mechanisms, a Gig Workers Consultative Council and a Gig Workers Tribunal (Government of Malaysia, 2025). The Department of Occupational Safety and Health lists the Act's commencement notification and related 2026 regulations, including regulations on compounding offences (DOSH, 2026).

An ISEAS–Yusof Ishak Institute analysis reports that the Act took effect in April 2026 and provides a framework for contractual protections, injury insurance, dispute settlement and worker representation. It also notes that implementation and institutional capacity will determine whether the law delivers meaningful improvements (Lee, 2026). The Act's significance for food delivery is that it recognises the need for protections that are not wholly dependent on traditional employment classification.

Malaysia's Self-Employment Social Security Scheme (LINDUNG KENDIRI), administered by PERKESO, includes gig workers such as food delivery riders among eligible groups and provides benefits that include medical, disability and dependent protection (Government of Malaysia, 2026). However, formal eligibility does not by itself guarantee universal effective coverage. Awareness, registration, contribution arrangements, claims processes and platform compliance all affect real-world protection.

Technology governance must now be considered alongside labour regulation. If AI systems determine job allocation, incentives, performance ratings or account suspension, workers need intelligible explanations and accessible appeal mechanisms. If robots are introduced, regulators must also consider public-space access, pedestrian safety, insurance, cybersecurity, data collection, incident reporting and responsibility when a delivery fails or causes harm. The legal framework should remain technology-neutral enough to adapt, while specifying clear duties for platforms and operators.

V. AI AS AN OPERATIONAL TOOL: OPPORTUNITIES AND RISKS

A. Demand forecasting and dispatch optimisation

AI can forecast order demand by location, time, weather, promotions and historical behaviour. Better forecasting may reduce idle time, improve rider positioning and help restaurants plan preparation. Dispatch algorithms can match orders with nearby riders, combine compatible deliveries and reduce unnecessary travel. Foodpanda Malaysia has publicly described using AI and machine learning to improve logistics, route optimisation and personalised customer recommendations, alongside initiatives related to rider support and green practices (MGTC, 2025).

The sustainability benefit depends on the objective being optimised. If the algorithm prioritises only speed and low cost, it may increase pressure on riders or encourage unsafe behaviour. A more balanced system would incorporate safe travel times, reasonable delivery radii, weather conditions, rider workload, vehicle type, accessibility and emissions. Platforms should disclose the broad principles used to allocate orders and calculate incentives.

B. Route planning and traffic-aware safety

AI-assisted routing can use live traffic, road closures, weather and historical travel-time data to recommend safer and more efficient routes. However, route optimisation should not treat the shortest travel time as the only success metric. Routes should account for road conditions, legal restrictions, safe stopping locations and the vulnerability of motorcycle riders. Delivery estimates should include realistic buffers so that riders are not pressured to compensate for optimistic algorithmic predictions by speeding.

C. Food waste and restaurant coordination

Demand prediction can help restaurants prepare quantities more accurately, manage inventory and reduce unsold food. Platforms can also improve communication when restaurants experience delays or stock shortages. Better order batching and synchronisation may reduce duplicated journeys. Yet predictive systems can reproduce historical biases or overestimate demand during promotions. Restaurants need control over menu availability and preparation capacity, while customers should receive accurate information.

D. Algorithmic management and the black box problem

AI also creates risks. Automated systems can influence which rider receives an order, how much they are paid, whether an incentive is triggered and whether an account is flagged. When the rules are opaque, workers may struggle to understand why their earnings fluctuate or how to challenge a decision. A 2026 report on food delivery riders in the United Kingdom documented calls for greater transparency around algorithmic pricing and order allocation; this is not direct evidence about Malaysia, but it illustrates a wider governance problem (The Guardian, 2026).

For Malaysia, the relevant policy lesson is that efficiency gains should be accompanied by procedural fairness. Platforms should provide clear fare breakdowns, explain material changes to incentive schemes, notify riders of adverse account decisions and offer human review. Independent audits could examine whether allocation systems systematically disadvantage particular locations, working patterns or groups of riders.

VI. CAN DELIVERY ROBOTS REPLACE HUMAN RIDERS?

Delivery robots are physical automation systems that may operate on pavements, campuses, business parks, residential developments or other controlled routes. They typically use sensors, cameras, mapping and AI-based navigation to move food from a restaurant or collection point to a customer. Unlike AI dispatch tools, which optimise human delivery work, robots can perform part of the physical transport task without a motorcycle rider. Drones may offer another form of automation, although payload, weather, airspace, safety and landing constraints limit their use.

The commercial case for robots is strongest where delivery routes are short, predictable and dense; pedestrian infrastructure is suitable; customers can collect orders at a designated point; and the robot can complete multiple trips with limited supervision. University campuses, hospitals, gated communities, technology parks and selected commercial districts may provide more favourable conditions than complex mixed-traffic streets.

However, a robot is not a cost-free substitute for a rider. Operators must purchase or lease hardware, maintain batteries and sensors, provide remote supervision, manage cleaning and charging, insure the fleet, secure permits and handle failed deliveries. Robots may be slowed by rain, flooding, uneven pavements, construction, crowds, stairs, curbs, theft or vandalism. They also require a safe handover process and accessible design for older people and persons with disabilities.

The available evidence reviewed for this paper does not establish widespread commercial deployment of sidewalk food-delivery robots in Malaysia as of October 2026. Accordingly, robot delivery should be treated as an emerging scenario requiring local trials and regulatory assessment, not as an already proven national replacement for riders. International pilots show that the technology is being tested, but operational performance and labour effects depend on local conditions.

ISSN 2348-3156 (Print)
International Journal of Social Science and Humanities Research ISSN 2348-3164 (online)
Vol. 14, Issue 4, pp: (401-408), Month: October - December 2026, Available at: www.researchpublish.com

Robots may also create new work in fleet monitoring, maintenance, charging, customer assistance, dispatch, safety supervision and repair. Yet these jobs may be fewer than the number of delivery tasks automated, may require different skills and may be concentrated in urban hubs. The distributional question is not simply whether robots create jobs, but whether affected riders can access those jobs and whether the new work offers comparable income and security.

VII. ENVIRONMENTAL TRADE-OFFS: EMISSIONS, PACKAGING AND FOOD WASTE

Food delivery's environmental footprint includes more than the vehicle used for the final kilometre. It includes restaurant energy and food preparation, packaging manufacture, platform data infrastructure, vehicle production, fuel or electricity, cold-chain requirements, failed deliveries and food waste. A delivery robot may reduce tailpipe emissions compared with a petrol motorcycle if it is electric, but its total environmental benefit depends on battery production, electricity generation, utilisation, repairability and service life.

Motorcycle electrification could be a more immediate transition pathway in Malaysia than widespread autonomous robotics. Electric motorcycles and battery-swapping systems can reduce local exhaust emissions and potentially lower operating costs, but the benefits depend on electricity sources, battery durability, charging access, financing and end-of-life management. Platforms and governments can support pilots, maintenance networks and fair financing without transferring excessive technology risk to riders.

Packaging is another major issue. A Malaysian chapter on the environmental effects of food delivery describes increased use of plastic bags, containers and parcel packaging during the pandemic, and the challenges of raising awareness and making sustainability campaigns effective (Loh & Quoquab, 2023). Packaging reduction requires cooperation among platforms, restaurants, customers and waste-management systems. Options include right-sized packaging, reusable containers with return logistics, recyclable materials where collection systems exist, and default reduction of unnecessary cutlery and bags.

Reusable packaging is not automatically superior in every circumstance. Its performance depends on the number of reuse cycles, washing methods, transport distances, loss rates and consumer return behaviour. Similarly, compostable packaging provides limited benefit where industrial composting facilities and separate collection are unavailable.

Platforms should avoid presenting material substitution as a complete solution without measuring actual waste outcomes.

AI can help estimate food demand, improve stock rotation, identify likely order cancellations and coordinate surplus-food redistribution. It can also support delivery batching and reduce unnecessary distance. But if AI-driven promotions stimulate excessive consumption or create more low-value trips, efficiency at the order level may not translate into lower system-wide impact. Environmental reporting should therefore include total deliveries, average distance, vehicle mix, packaging per order, food waste and emissions per completed order.

VIII. A FIVE-PILLAR FRAMEWORK FOR SUSTAINABLE FOOD DELIVERY

This paper proposes a five-pillar framework to assess and guide the sustainability of Malaysia's food delivery gig economy:

1. Economic viability and fair value distribution. Track platform operating costs, restaurant margins, rider net earnings after expenses, waiting time, order density and the distribution of value across the transaction. Avoid evaluating success solely through gross order growth or low consumer prices.

2. Decent work and social protection. Implement the Gig Workers Act, strengthen PERKESO coverage, provide transparent service agreements, fair dispute resolution, accessible worker representation and protection against arbitrary deactivation. Ensure that algorithmic changes do not silently undermine earnings.

3. Road safety and occupational health. Design realistic delivery windows, prohibit incentives that reward unsafe speed, provide safety training and protective equipment, improve incident reporting and include weather and road-risk conditions in dispatch decisions.

4. Environmental performance and circularity. Measure emissions, packaging, food waste and vehicle life-cycle impacts. Promote appropriate electrification, efficient batching, reusable packaging systems and responsible battery collection and recycling.

5. Accountable AI and responsible automation. Require explainable material platform decisions, human appeal processes, privacy safeguards, independent audits and worker consultation. Test robots in controlled environments before wider deployment and assess accessibility, pedestrian safety and labour impacts.

The framework emphasises that sustainability is a governance outcome rather than a technological feature. A platform can have sophisticated AI and electric vehicles yet remain unsustainable if riders cannot earn a reasonable net income, restaurants face excessive charges, or packaging waste is not managed. Conversely, a human-led delivery system can improve sustainability through safer work design, better logistics and lower-impact operations.

IX. POLICY AND INDUSTRY RECOMMENDATIONS

First, Malaysia should strengthen implementation of the Gig Workers Act through clear guidance, accessible dispute resolution, effective enforcement and transparent reporting. The Consultative Council should include meaningful representation from p-hailing riders, platform operators, restaurants, consumer groups and relevant public agencies. Worker voice is essential when rules governing dispatch, incentives and automation are designed.

Second, platforms should publish understandable information about rider remuneration. This should distinguish gross fares, commissions, incentives, tips, distance-related payments and relevant deductions. Workers should be able to access their order history and earnings data in a portable format. Material changes to allocation or incentive systems should be communicated in advance and subject to review.

Third, safety should be built into the platform's performance metrics. Delivery-time estimates should reflect realistic road conditions, and riders should not be penalised for refusing unsafe routes or pausing work during severe weather.

Platforms should collaborate with road-safety authorities and rider associations to improve training, protective equipment, incident data and safer app interfaces.

Fourth, environmental measures should be verifiable. Platforms should report packaging intensity, food-waste initiatives, vehicle mix and delivery-related emissions using consistent boundaries and methods. Restaurant partners should be supported in adopting right-sized packaging and reusable-container systems where reverse logistics are feasible. Customers can be encouraged to decline unnecessary cutlery and choose consolidated delivery windows.

Fifth, AI pilots should be evaluated against multiple outcomes. A route algorithm should be assessed not only for minutes saved but also for rider safety, distance travelled, idle time, net earnings and emissions. Automated order allocation should be audited for fairness. Platforms should provide a human channel for workers to challenge erroneous account flags or pay calculations.

Sixth, robot trials should begin in bounded locations with clear operating rules. Authorities should define speed limits, pedestrian priority, accessibility standards, operating hours, insurance, remote supervision, data protection and incident reporting. Trials should publish evidence on delivery reliability, energy use, public acceptance, safety incidents and employment effects. Expansion should depend on demonstrated public benefit, not technology promotion alone.

Finally, transition support should be planned before automation scales. Riders who wish to move into fleet operations, EV maintenance, battery services, robot supervision, customer support or logistics coordination should have access to accredited training and employment pathways. Training should be linked to actual demand and accompanied by income support where necessary. Platforms benefiting from publicly supported automation should contribute to credible transition measures.

X. DISCUSSION: WILL AI AND ROBOTS SAVE OR DESTROY THE INDUSTRY?

AI and robots could save parts of the industry by improving order matching, reducing wasted kilometres, forecasting demand, limiting food waste and making some deliveries safer or cheaper. They could also improve the customer experience and help restaurants coordinate demand. These gains, however, are conditional on appropriate design and governance.

They could damage the industry if automation is used primarily to cut labour costs, concentrate market power or shift new risks onto riders and restaurants. Poorly governed algorithms may increase work intensity and income uncertainty. Poorly designed robot systems may create pedestrian hazards, inaccessible public spaces or new forms of surveillance.

A narrow focus on faster delivery may also increase packaging and consumption rather than reduce environmental impacts.

Three future pathways are plausible. In a human-centred augmentation scenario, AI supports riders and restaurants while human delivery remains dominant. In a hybrid scenario, AI dispatch and electric vehicles are combined with robots in controlled settings, while human riders serve complex, dispersed and high-variation routes. In a capital-intensive automation scenario, large operators deploy fleets of robots and automated fulfilment systems in dense markets, reducing demand for some rider tasks and increasing concentration. The timing and scale of each pathway remain uncertain.

Malaysia's likely trajectory will depend on urban form, labour costs, infrastructure, regulatory capacity, consumer preferences, weather, road design and the commercial performance of pilots. It is therefore premature to declare that robots will replace Malaysian riders in the near term. The more immediate and consequential change may be AI-driven management of existing human delivery networks. Policy attention should address these current effects while preparing for future physical automation.

XI. CONCLUSION

Malaysia's food delivery gig economy faces a sustainability crisis that cannot be solved by technology alone. The sector creates convenience, market access and flexible income, but also faces rider safety risks, unstable earnings, uneven social protection, environmental waste and pressure on restaurants and platforms. AI and robotics offer opportunities to improve logistics and reduce selected costs, but they can also intensify algorithmic control, concentrate capital and displace workers.

AI-assisted optimisation is already relevant to the sector and can deliver practical benefits if it is designed around safe delivery times, fair allocation, reduced waste and transparent earnings. Delivery robots may have a role in controlled environments, but the available evidence does not justify treating them as a near-term wholesale replacement for Malaysian riders. Their true sustainability must be assessed across capital, energy, accessibility, safety, labour and life-cycle impacts.

The future of the industry should be judged not by whether a meal arrives in the shortest possible time, but by whether the system can deliver food affordably while supporting viable restaurants, decent work, safer roads and lower environmental impact. The Gig Workers Act provides a foundation, but effective implementation, accountable AI, measurable environmental standards and worker participation are essential. Technology can help save the industry—but only if it serves people and the public interest rather than treating them as costs to be removed.

REFERENCES

[1] Chan, H.-L., Cheung, T.-T., Choi, T.-M., & Sheu, J.-B. (2023; published in volume 2025). Sustainable successes in third-party food delivery operations in the digital platform era. Annals of Operations Research, 355, 1419–1455. https://doi.org/10.1007/s10479-023-05266-w

[2] Department of Occupational Safety and Health (DOSH). (2026). Regulations under the Gig Workers Act 2025 [Act 872]. Government of Malaysia. https://dosh.gov.my/en/perundangan/peraturan/peraturan-di-bawah-akta-pekerja-gig-2025-akta-872/

[3] Government of Malaysia. (2025). Gig Workers Act 2025 (Act 872). https://dosh.gov.my/wp-content/uploads/2026/04/Act-872-GIG-WORKERS-ACT-2025.pdf

[4] Government of Malaysia. (2026). Self-Employment Social Security Scheme (LINDUNG KENDIRI). https://www.malaysia.gov.my/en/topics/skim-keselamatan-sosial-pekerjaan-sendiri-lindung-kendiri

[5] Institute of Strategic and International Studies (ISIS) Malaysia. (2026, July 6). Malaysia's Gig Workers Act. https://www.isis.org.my/2026/07/06/malaysias-gig-workers-act/

[6] Lee, H. A. (2026). Gig workers in Malaysia: Is the new law a good deal? ISEAS Perspective 2026/48. ISEAS–Yusof Ishak Institute. https://www.iseas.edu.sg/articles-commentaries/iseas-perspective/2026-48-gig-workers-in-malaysia-is-the-new-law-a-good-deal-by-lee-hwok-aun/

[7] Loh, W. W. L., & Quoquab, F. (2023). As food delivery business is skyrocketing, so is our environmental disaster. In Socially Responsible Plastic. Emerald Publishing. https://doi.org/10.1108/S2043-052320230000019005

[8] Malaysian Green Technology and Climate Change Corporation (MGTC). (2025, March 31). Empowering the gig economy, Foodpanda's vision. https://www.mgtc.gov.my/2025/03/empowering-the-gig-economy-foodpandas-vision/

[9] Rusli, R., Mohammad, M. Z., Kamaluddin, N. A., Bakar, H., & Md Isa, M. H. (2022). A comparison of characteristics between food delivery riders with and without traffic crash experience during delivery in Malaysia. Case Studies on Transport Policy, 10(4), 2244–2250. https://doi.org/10.1016/j.cstp.2022.10.006

[10] Rusli, R., Saiful Amri, F. H., Yahya, N. A., Oviedo-Trespalacios, O., Syed Mohamed Rahim, S. A., Ismail, A. A., & Salim, P. I. S. (2025). Rush hours: The risky behaviours of food delivery and non-food delivery motorcycle riders. Journal of Road Safety, 36(3), 27–35. https://doi.org/10.33492/JRS-D-25-3-2473868

[11] Zulkifly, S. S., et al. (2023). Work-related safety and health issues among food and parcel delivery riders. IntechOpen. https://www.intechopen.com/chapters/87219

[12] Assessment of ergonomic risks: REBA analysis of food delivery riders in Eastern Peninsular Malaysia. (2025). PubMed Central. https://pmc.ncbi.nlm.nih.gov/articles/PMC12064350/

[13] Food delivery riders call on platforms to open up AI 'black box' they say has cut pay. (2026, September 5). The Guardian. https://www.theguardian.com/business/2026/sep/05/food-delivery-riders-platforms-open-ai-black-box-cut-pay