Invisible Workers in Philippines' Ghost Kitchens: Trends and Implications

Daryl Cornell[a] ⬤, Jay-R Manamtam[a] ⬤, & Aaron Tham[b]*⬤

[a]Polytechnic University of the Philippines
[b]University of the Sunshine Coast, Australia

*corresponding author: mtham@usc.edu.au

▸ Cornell, D., Manamtam, J-R, & Tham, A. (2024). Invisible workers in Philippines' ghost kitchens: Trends and implications. *Advances in Southeast Asian Studies, 17*(2), 187-200.

This research workshop reports on employee relations within ghost kitchens, which are delivery-only food businesses. Surveys conducted with 125 'invisible' ghost kitchen employees revealed that almost 70% of them had less than one year's experience working in ghost kitchens. Yet, close to half could see themselves working in such environments for four years or more. Ghost kitchens also featured a small pool of less than four staff and a workforce aged 18-25. More than half of the respondents possessed undergraduate qualifications, and at least two-thirds of those surveyed were female. Overall, favorable working conditions, as evidenced by ghost kitchen employees, contribute to theoretical and managerial implications for existing and future ghost kitchen practices.

Keywords: Cloud Kitchen; Digital Disruption; Hospitality Human Resources; Platform Economy; Virtual Kitchen

∼

INTRODUCTION

This research workshop focuses on one of the more recent developments in the form of a platform economy, characterized by economic transactions taking place entirely in a digital ecosystem (Farrell & Greig, 2016). Some scholars attach the term 'gig economy' to the platform economy, positioning the workforce in a highly precarious frame because they are contractors for service rather than full-time employees of the organizations concerned (Lin *et al.*, 2023; Popan, 2024). In this vein, studies have examined the workforce from perspectives such as Uber and other meal-delivery riders within a hospitality context (Goods *et al.*, 2019; Myhill *et al.*, 2021), though the 'invisible workers' of ghost kitchens remain largely under-studied (El Hajal & Rowson, 2021).

Ghost kitchens have been known in other contexts as cloud/virtual/dark kitchens and refer to delivery-only businesses where kitchen operations are not disclosed to customers (Ashton *et al.*, 2023; Cai *et al.*, 2022; Hakim *et al.*, 2022).

Ghost kitchens operate on mobile applications (apps), whereby customers can select from a range of menus or cuisine brands and are taken by food delivery riders to their intended address (Chen & Hu, 2024; Klouvidaki *et al.*, 2023). According to Howarth (2023), the ghost kitchen industry was reportedly worth US$58 billion and is anticipated to grow to almost US$90 billion by 2026.

Some studies have emerged to explore consumer motivations towards ghost kitchens (Leung *et al.*, 2023; Recuero-Virto & Valilla-Arrospide, 2022; Shapiro, 2023) or why businesses operate such establishments (Fridayani *et al.*, 2021; Kulshreshtha & Sharma, 2022). However, few studies have empirically analyzed ghost kitchen working conditions and employee welfare, with Giousmpasoglou *et al.* (2024) alleging labor exploitation. Prompted by extant literature (or a lack thereof), the research questions are:

- Who are these ghost kitchen employees?
- What are these employees' working environments?

Understanding the perspectives of these ghost kitchen employees helps to elucidate greater insights into their work conditions and what may account for their loyalty to the business (or lack thereof). This research then addresses the gaps in extant literature that have called for more studies on the viewpoints of ghost kitchen employees (da Cunha *et al.*, 2024; Rosette, 2024).

LITERATURE REVIEW

The meteoric rise of ghost kitchens can be broadly classified into two main themes – technological advancement and the COVID-19 pandemic. These broad themes provide the necessary backdrop to elucidate employee characteristics within ghost kitchens.

Technological Advancement

Technological advancement in terms of mobile connectivity has given rise to hospitality innovation, including online food delivery (Ardiansyahmiraja *et al.*, 2024; Darekar *et al.*, 2020). Ghost kitchens, in this space, allow for on-demand and a product/process focus where such establishments deliver items on their menu to their intended audiences and monitor trends and consumer preferences to reconfigure menus of interest (Choudhary, 2019; John, 2023). This mechanism reduces inefficiencies and potential food waste because orders are cooked on demand without significant storage requirements (Cai *et al.*, 2022; Shroff *et al.*, 2022).

COVID-19 Pandemic

The COVID-19 pandemic disrupted hospitality operations as many countries were compelled to halt dining-in opportunities for hospitality establishments (Kaavya & Andal, 2022; Ma *et al.*, 2021). To arrest the financial and operating losses, ghost kitchens became popular in streamlining kitchen operations without having direct customer contact (Gonzalez-Aleu *et al.*, 2022; Othman *et al.*, 2021; Vu *et al.*, 2023).

YEAR	AUTHOR(S)	CONTEXT	METHOD	FINDINGS	FUTURE STUDIES
2020	Upadhye & Sathe	Indian ghost kitchen in Pune	Case study on Swiggy ghost kitchen	The ghost kitchen was located in an area that was convenient to service its intended customers Ghost kitchens would benefit from supporting a range of food delivery platforms and ensuring food and hygiene quality The strength of a ghost kitchen is its ability to have staff specialize in tasks	
2021	Othman *et al.*	Customer usage of ghost kitchens in Malaysia	200 online surveys	More than three in five respondents indicated that perceived control, convenience, and service fulfillment made them adopt ghost kitchens	
2021	Wankhede *et al.*	Ghost kitchen sustainability in Mumbai, India	40 online surveys	Customers indicate they are likely to continue purchasing from ghost kitchens post-COVID-19	
2022	Cai *et al.*	US online food service customers	977 online surveys	Personal and societal benefits develop trust in online food delivery, while societal risk reduces trust	Customer familiarity with ghost kitchens and level of trust Perspectives from operators Cross-cultural insights
2022	Chatterjee *et al.*	Ethical and sustainable perceptions of ghost kitchens in India	Question-naires with 72 customers and 68 stakeholders (managers)	Loss of human touch from traditional restaurants to on-demand ghost kitchens Men perceived ghost kitchens as being more cost-effective than women Ghost kitchens generate lower food waste	Employee perspectives needed
2022	Deepak *et al.*	Financial viability of ghost kitchens in Hyderabad	12 interviews with ghost kitchen managers	Ghost kitchens offer a more attractive return on investment than traditional restaurant setups	
2022; 2023	Hakim *et al.*	Brazilian consumers	623 online questionnaires	General public awareness of ghost kitchens is in its infancy Perceived food safety, trust in health systems, quality control, consumer experience, and solidarity with foodservice were positive predictors of consumption	Consumer preferences of ghost kitchen brands Food safety and hygiene in ghost kitchens vs full-service restaurants
2022	Kulshreshtha & Sharma	Indian Gen Z ghost kitchen users	576 online questionnaires	Purchase decisions were influenced by a combination of factors including food quality, marketing, convenience, price, hygiene and speed	Sustainability of ghost kitchens Other cultural contexts Gender and age variables
2022	Nigro *et al.*	Ghost kitchen consumer intentions post COVID-19	596 online surveys with Italian consumers	Social influence is a key driver of ghost kitchen adoption Hedonic value is not a main element of ghost kitchen adoption	Country differences

2022	Ongkasuwan *et al.*	Ghost kitchen consumers and providers in Thailand, China and the USA	554 surveys with consumers and 18 interviews with providers	Convergence towards a more efficient food delivery management system is advantageous	Effect of artistic design for meals Use of robots for delivery Compliance with health regulations
2023	Ghazanfar *et al.*	Ghost kitchen stakeholders in Dubai, UAE	7 interviews with executive chefs, restaurant owners and a ghost kitchen operator	Ghost kitchens helped businesses get through COVID-19 to save on rental spaces and overheads However, ghost kitchens are heavily reliant on third party applications and can come at a cost of profit margins	Stakeholder analysis Other destinations
2023	Khan *et al.*	Ghost kitchen business model in Dhaka, Bangladesh	168 online surveys with customers, 33 surveys and 6 focus groups with managers, and 3 interviews with industry experts	Customers prefer ghost kitchens over traditional establishments as they are cheaper and faster, but food quality was perceived as higher in restaurant settings While ghost kitchens require less overhead costs to setup, they are not as flexible in terms of employee payroll systems, and overall, managers are undecided as to whether the ghost kitchen model will grow in the next few years	Engagement with social media and returns on investment with ghost kitchens Longitudinal studies on sustainable ghost kitchen operations
2023	Klouvidaki *et al.*	Ghost kitchen consumers in Greece	1097 consumers	Ghost kitchens offer a new innovative tool to engage with consumer expectations and demands	Other contexts Longitudinal studies
2023	Pookulangara *et al.*	US based ghost kitchen consumers	316 consumers	Perceived innovativeness, price and hedonic motivations triggered attitudes towards ghost kitchen patronage	Experimental studies Other contexts Post pandemic attitudes and preferences
2023	Vu *et al.*	Ghost kitchen owners in Vietnam	20 owners and head chefs	Ghost kitchens facilitated entrepreneurial freedom to make decisions and adapt based on market preferences Ghost kitchens enabled the development of customer-centric brands Future developments call for investment into training and development of staff and processes	Longitudinal studies Cross-cultural perceptions
2024	Leung *et al.*	Ghost kitchen consumers in the US	487 consumers	External attribution and ethnic cuisine strongly influence consumption patterns	Comparison between chain and independent owned ghost kitchens Consumer needs in terms of future dining behavior

Table 1. Empirical studies on ghost kitchens (compiled by authors)

Employees could also work with specializations of labor – focusing on a specific cuisine type, while delivery drivers took charge of reaching the intended addresses (Chern & Ahmad, 2020; Talamini *et al.*, 2022).

Despite these advantages, ghost kitchens are not without their critics. Altenried (2024) alluded to the precariousness of ghost kitchen employment conditions,

where exploitation, wage theft, and work contracts are under intense scrutiny. Several scholars (Aiswarya & Ramasundaram, 2024; Ghosh & Reddy, 2021; Wrycza & Maslankowski, 2020) called out how ghost kitchens have shifted socio-cultural practices of home cooking and dining out, which may inadvertently create cultures of convenience. Ashton *et al.* (2023) and Ghazanfar *et al.* (2023) further problematize how ghost kitchens can result in business dilemmas of gaining new markets but losing control of customer interactions. Amidst this backdrop, 17 empirical studies have emerged to paint a more nuanced picture of ghost kitchens, as depicted in Table 1. Importantly, these papers reveal how ghost kitchens have become more sophisticated and reflect a growing adoption of different business models catering to diverse market segments (Hakim *et al.*, 2023).

However, as Chatterjee et al. (2022) postulated, very little has been empirically revealed about employees in ghost kitchens and their employment conditions and futures in these facilities. This is important to address as very little is known about their plight and circumstances, especially with the global rise of ghost kitchen models. This knowledge gap justifies undertaking research in this space to uncover employee sentiments and experiences in working within ghost kitchen environments to advance theory and practice in this space.

METHOD

The paper utilized quantitative research approaches to provide a systematic approach to answer the research questions. By employing online surveys and statistical analysis techniques, the researchers collected and analyzed numerical data that offered valuable insights into the experiences and perspectives of ghost kitchen employees in the Philippines. Qualitative data was not considered feasible due to the data collection undertaken during the pandemic, limiting opportunities to conduct interviews or focus groups with participants working various shifts and unavailable to meet outside work hours. The survey design was informed by the work of other scholars (Md Fadzil & Che Azmi, 2022; Wu *et al.*, 2019), as well as direct answers to profile these 'invisible' workers.

The Philippines was chosen as the context for investigation as it was the country that exhibited the fastest-growing food delivery market in Southeast Asia, worth an estimated US$8 billion in 2025 (Abudheen, 2023). As data collection occurred whilst the COVID-19 pandemic was still raging, online surveys were the most realistic and safe option for both the research team and respondents. Following a call for participation through the researchers' networks and on social media sites related to the Filipino hospitality workforce, 125 completed surveys were received in October 2022. Statistical software and techniques such as path analysis were adopted in this research using SPSS to investigate patterns of effect within the variables. Moreover, WARP-PLS and AMOS were employed in this study since they looked at how the components directly affected the outcomes. The software's ability to handle complex models with both reflective and formative indicators proved invaluable in assessing these components' direct and indirect effects on each other. WARP PLS facilitated the examination of path coefficients, the significance of relationships, and the overall model fit, providing a comprehensive understanding of the factors influencing the

experiences and perceptions of ghost kitchen employees. Through the use of WARP PLS, the study established a strong theoretical foundation and contributed valuable insights into ghost kitchens and gig economy research. KMO (Kaiser-Meyer-Olkin) and Bartlett's test of sphericity were employed in this study to assess the suitability of the data for factor analysis. These statistical tests are crucial in determining if the variables under consideration are suitable for dimension reduction techniques like factor analysis.

Hypotheses were derived from the current body of work surrounding ghost kitchens, particularly from the perspectives of employees. These hypotheses sought to expand on knowledge regarding employee experiences, satisfaction, ghost kitchen loyalty, and outlook on individual likelihood to perceive desirable futures working in this sector. These hypotheses are therefore structured to help address the research questions of interest.

RESULTS

Table 2 shows the breakdown of the respondents who had completed the survey.

	f	%		f	%
1. Do you work in a cloud/ghost kitchen based on the definition above?			20. How many employees usually work with you during each shift?		
Yes	112	89.6	1-4	98	78.4
No	13	10.4	5-9	17	13.6
2. How long have you been working in a cloud/ghost kitchen?			10 or more	10	8
1-6 months	61	48.8	21. How many hours do you work during each shift?		
7-12 months	15	12	1-4	47	37.6
More than a year	49	39.2	5-8	62	49.6
3. Before the cloud/ghost kitchen, did you have any prior experience working in a kitchen or hospitality setting?			9 or more	16	12.8
Yes	73	58.4	22. Do you consider your cloud/ghost kitchen accessible (e.g. easy to get to)?		
No	52	41.6	Yes	114	92.68
4. How many years of kitchen/hospitality experience did you have prior to the cloud/ghost kitchen?			No	9	7.32
Less than a year	87	69.6	23. What is your gender?		
1-4 years	24	19.2	Male	42	33.6
5-9 years	9	7.2	Female	82	65.6
10 years or more	5	4	Non-binary	1	0.8
16. How long do you see yourself working in the cloud/ghost kitchen for?			24. What is your income level per month?		
1-6 months	23	18.4	Less than 2,500 Pesos	25	20
7-12 months	15	12	Between 2,501 and 5,000 Pesos	33	26.4
1-3 years	29	23.2	Between 5,001 and 7,500 Pesos	27	21.6
4 years or more	58	46.4	7,501 Pesos or others	40	32
17. Would you recommend this cloud/ghost kitchen to others?			25. What is your age group?		
Yes	120	96.8	18-25	83	66.4
No	4	3.23	26-35	24	19.2

18. Would you work for another cloud/ghost kitchen?			36-45	15	12
Yes	73	60.8	46-55	3	2.4
No	46	38.3	26. What is your highest qualification?		
Not Sure	1	0.8	Junior High School	5	4
19. Is your cloud/ghost kitchen part of a wider franchise?			Senior High School	26	20.8
Yes	32	25.6	University or College Undergraduate Degree	70	56
No	67	53.6	University or College Postgraduate Degree	21	16.8
Not Sure	26	20.8	Vocational	3	2.4

Table 2. Profile of respondents (compiled by authors)

Table 3 includes the correlation matrix of items 6-15 in the cloud/ghost kitchen. The intercorrelations of items 6, 7, 8, and 9 exceed 0.30, while the intercorrelations of items 10, 11, 12, 13, 14, and 15 exceed 0.40.

	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14
Item 6	1.00								
Item 7	0.55	1.00							
Item 8	0.39	0.55	1.00						
Item 9	0.40	0.42	0.52	1.00					
Item 10	0.34	0.44	0.65	0.56	1.00				
Item 11	0.30	0.37	0.49	0.33	0.42	1.00			
Item 12	0.22	0.13	0.61	0.40	0.63	0.47	1.00		
Item 13	0.17	0.36	0.45	0.36	0.49	0.55	0.47	1.00	
Item 14	0.32	0.48	0.49	0.36	0.51	0.44	0.514	0.56	1.00
Item 15	0.29	0.41	0.45	0.29	0.54	0.50	0.592	0.59	0.72

Table 3. Correlation Matrix of 10 items in the cloud/ghost kitchen (compiled by authors)

Table 4 revealed the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, Bartlett's test of sphericity, and rotated component matrix. The KMO value of 0.875 indicates that the degree of common variance is meritorious. Bartlett's test was

KMO AND BARTLETT'S TEST			ROTATED COMPONENT MATRIX		
Kaiser-Meyer-Olkin (KMO)		0.879	Items	Component	
Bartlett's Test of Sphericity	Chi-Square	607.941		1	2
	Df	45	Item 6		0.835
	Sig.	Less than 0.001	Item 7		0.739
			Item 8	0.549	0.588
			Item 9		0.676
			Item 10	0.641	
			Item 11	0.656	
			Item 12	0.737	
			Item 13	0.799	
			Item 14	0.745	
			Item 15	0.829	

Table 4. KMO Test, Bartlett's Test, and Rotated Component Matrix (compiled by authors)

significant (less than 0.05), suggesting that the correlation matrix is not an identity matrix. Both the KMO and Bartlett's tests revealed that it is preferable to conduct factor analysis [9]. The rotated component matrix showed that items 6, 7, 8, and 9 have the highest loading from component 2, while items 10, 11, 12, 13, 14, and 15 have the highest loading from component 1.

Table 5 shows the indicator loading of all constructs/items, as well as the average variance extracted, composite reliability, and Cronbach alpha measurement. In addition, the AVE of components 2 and 1 are 0.603 and 0.616, respectively. The outcomes are all acceptable, as all the extracted average variances were greater than 0.5. Given that all the composite reliability values are greater than 0.7 for all the items, the instrument has good to excellent consistency in terms of component 2 (CR = 0.858; CA = 0.780) and component 1 (CR = 0.906; CA = 0.874).

STATEMENT	Mean	SD	AVE	CR	CA
Component 2			0.603	0.858	0.780
6. To what extent has working at a cloud/ghost kitchen improved your income level?	3.73	1.02			
7. To what extent has working at a cloud/ghost kitchen improved your job security?	3.82	0.94			
8. To what extent has working at a cloud/ghost kitchen improved your working conditions?	3.98	0.9			
9. To what extent has working at a cloud/ghost kitchen been more flexible in terms of working hours?	4.14	0.82			
Component 1			0.616	0.906	0.874
10. To what extent has working at a cloud/ghost kitchen improved kitchen efficiency?	4.18	0.77			
11. To what extent has working at a cloud/ghost kitchen reduced gender pay gaps?	3.92	0.92			
12. To what extent has working at a cloud/ghost kitchen improved kitchen cleanliness?	4.19	0.93			
13. To what extent has working at a cloud/ghost kitchen made hospitality work easier (e.g. 2t having to deal with customers)?	4.14	0.87			
14. To what extent has working at a cloud/ghost kitchen improved employee morale?	4.1	0.87			
15. To what extent has working at a cloud/ghost kitchen enhanced organisational culture?	4.07	0.85			

AVE: Average Variances Extracted; CR: Composite Reliability; CA: Cronbach Alpha.

Table 5. Reliability and Validity Tests of the Constructs (compiled by authors)

Table 6 presents the HTMT ratios. Since the HTMT value is 0.793 (<0.85), which is best, it passes the HTMT ratios.

The following findings were drawn from the data after it had been collected, cleaned, and examined. The study used Partial Least Square - Structural Equation Modeling (PLS-SEM) to examine the relationships between the two components.

Table 7 represents the model fit and quality indices of the model. It depicts that APC = 0.661 (p < 0.001), ARS = 0.437 (p < 0.001), AARS = 0.432 (p < 0.001). All p-values

	COMPONENT 2	COMPONENT 1
Component 2		
Component 1	0.793	

Note: For HTMT, good if < 0.90, best if < 0.85

Table 6. KMO Test, Bartlett's Test, and Rotated Component Matrix (compiled by authors)

of the APC, ARS, and AARS should be less than 0.05 to have a good quality fit (Kock, 2015). Thus, the model provides a more comprehensive and explanatory prediction of the latent variables (Kock & Lynn, 2012). The Tenenhaus Good of Fit (GoF) value is 0.516, which is greater than the threshold of ≥ 0.36, hence having a higher explanatory power.

INDEX	COEFFICIENT
APC	0.661, P<0.001
ARS	0.437, P<0.001
AARS	0.432, P<0.001
AFVIF	1.755, acceptable if ≤ 5, ideally ≤ 3.3
Tenehaus GoF	0.516, small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36

Table 7. Model Fit and Quality (compiled by authors)

Table 8 shows the direct and indirect effects of the PLS Model. Based on the findings, the hypothesis was confirmed. The path coefficient of H1 is 0.661 with an effect size of $f^2 = 0.076$. Based on Cohen's effect size, the hypothesis falls under a large effect size.

Hypothesis	Path Coefficient	p-value	Standard Error	Effect Size (f^2)	Decision
Direct Effects					
H1. Comp2 ▶ Comp1	0.661	<0.001	0.076	0.437	Supported

Note: f^2 is the Cohen's (1988) effect size: 0.02=small, 0.15=medium, 0.35=large.

Table 8. Direct Effects of the PLS Model (Component 2 to Component 1) (compiled by authors)

Figure 1 shows the PLS path model of components 2 and 1 with path coefficients. It shows that component 2 has a direct effect on component 1 ($\beta = 0.661$; $p < 0.01$).
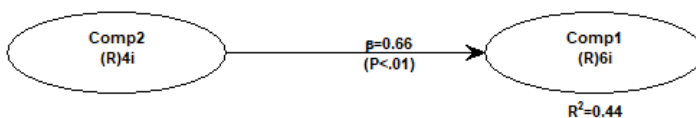

Figure 1. Conceptual model of components 1 and 2 with parameter estimates (compiled by authors)

Table 9 shows the regression path coefficient and p-values of component 2. The paths from item 6 to item 9 are significant.

HYPOTHESES	PATH COEFFICIENT	S.E.	C.R.	P - VALUE	DECISION
H2: Item 6 ✍ Item 9	0.318	0.066	4.783	< 0.001	Supported
H3: Item 6 ✍ Item 7	0.426	0.073	5.870	< 0.001	Supported
H4: Item 9 ✍ Item 7	0.273	0.090	3.023	0.003	Supported
H5: Item 7 ✍ Item 8	0.381	0.073	5.193	< 0.001	Supported
H6: Item 9 ✍ Item 8	0.385	0.084	4.561	< 0.001	Supported

Table 9. Regression Path Coefficient of Component 2 (compiled by authors)

Chisquare =.255, df=1, p=.614
RMSEA=.000, GFI=.999, CFI=1.000
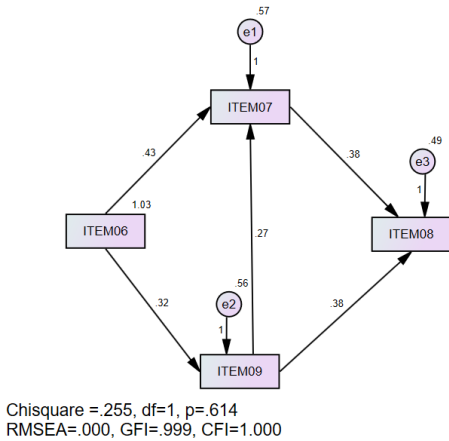
Figure 2. Cloud Ghost Kitchen model of component 2 with parameter estimates (compiled by authors)

Figure 2 shows the PLS path model of component 2 with path coefficients. The critical ratios of H2, H3, H4, H5, and H6 are 4.78, 5.87, 3.02, 5.19, and 4.56 respectively.

Table 10 shows the goodness of fit of component 2 and fit indices. The Chi-square value is 0.255 which is less than twice the degrees of freedom. The p-value is 0.614 which is between 0.05 to 1.00. The RMSEA is less than 0.05, the GFI is 0.999 which is between 0.95 and 1.00 and the CFI is 1.00. All values of different fit measures suggest a good fit model.

GOODNESS OF FIT	VALUES	REMARKS
Chi square	0.255	Good fit
p-value	0.614	Good fit
Chi square/df	0.255	Good fit
RMSEA	0.000	Good fit
GFI	0.999	Good fit
CFI	1.000	Good fit

Table 10. Goodness of fit and fit indices of Component 2 (compiled by authors)

DISCUSSION

Each of the hypotheses presented in Figure 2 was supported by the data, indicating that working in a ghost kitchen was largely perceived as a positive experience by the participants in the study. Compared to the work of Giousmpasoglou et al. (2024),

ghost kitchen work was not perceived to be exploitative but instead as a sound working environment for employees, at least in the case of the Filipino sample in this study. Correspondingly, this resulted in stronger word-of-mouth recommendations for ghost kitchens as employers of choice. The hypothesis of employee loyalty was also supported in this study. The benefits of the study from employee loyalty can lead to higher employee retention rates and reduced labor hiring costs. This may be attributed to the specialization of labor evident in ghost kitchens, thereby reducing employee requirements to handle numerous work tasks, as well as customer interactions that would be present in a full-service restaurant (Tayeb, 2021). Contrary to the findings of Giousmpasoglou *et al.* (2024), this research suggests that employees in developing nations like the Philippines may gravitate toward working in ghost kitchens because they may be afforded higher wages and operating conditions as compared to other kitchens, prompted by the COVID-19 pandemic. Crucially, this outcome triggers further studies to unpack whether such assertions are consistent elsewhere, especially in countries of the Global South.

The research findings can inform subsequent management decisions (Deepak *et al.*, 2022; Kulshreshtha & Sharma, 2022). For example, employers may benefit from individualized onboarding and training programs designed to capitalize on the enthusiasm and new perspectives of this young workforce. Similarly, this may also advocate increased worker rights, unionization efforts, or other forms of worker empowerment as a response to the challenges posed by labor exploitation in platform-based economies. It could discuss ongoing efforts to address gaps in ghost kitchen operations, such as layout, task specialization, cleanliness, and employee health and well-being.

CONCLUSION

This research workshop highlights employee relations within the context of ghost kitchens. The major findings include the fact that many employees in ghost kitchens are new to this type of employment, with less than a year of experience. However, many stated that they intend to continue working in such situations for at least four years. The study unveils a positive correlation between the adoption of ghost kitchens by young employees as hospitality workplaces of choice.

This research workshop adds to our understanding of how ghost kitchens work and how they might be efficiently handled within the broader context of the hospitality industry. It interprets the experiences and perspectives of 'invisible' staff working behind the scenes to prepare food. From a research standpoint, this study enhances current information on ghost kitchens. It is an acknowledged limitation that this research offers insights from 125 employees surveyed solely in the context of the Philippines. Future researchers can use this information to further examine and comprehend the mechanics of ghost kitchen operations elsewhere, especially from a qualitative perspective which could offer more diverse perspectives.

Further insights into the demographic and educational backgrounds of employees in this sector are provided. Theoretical contributions in the form of decent work and employee relations in a ghost kitchen setting provide more nuanced insights, addressing gaps in existing literature, which has predominantly focused on questions of business models or customer experiences. From a managerial perspective, current

and future ghost kitchen operations should emphasize the positive attributes and favorable working conditions that can attract a wider pool of potential employees. This study provides a foundation for future research into ghost kitchen employee relations, particularly data about the demographics, perspectives, and experiences of people employed in such establishments, and calls for more empirical investigation in this field.

Future studies should explore and analyze ghost kitchens' staff relations in more detail. This could involve conducting in-depth interviews or focus groups with employees to learn more about their perspectives, difficulties, and levels of satisfaction with this business model. It might also be beneficial to investigate how customers feel about ghost kitchens and their interactions with the 'invisible' staff. This might offer suggestions on enhancing the customer experience and dealing with other potential issues.

∿

REFERENCES

Abudheen, S. (2021, July 26). *Foodtech transformation in Philippines: Cloud kitchens and online delivery reshape eating habits.* https://e27.co/how-philippine-cloud-kitchen-industry-is-piggybacking-on-its-unique-food-culture-shifting-customer-behaviour-20210726/

Aiswarya, B., & Ramasundaram, G. (2024). Online food delivery technology and family food traditions: A sociocultural perspective. *Journal of Information Technology Teaching Cases, 14*(1), 68–73.

Altenried, M. (2024). Mobile workers, contingent labour: Migration, the gig economy and the multiplication of labour. *Environment and Planning A: Economy and Space, 56*(4), 1113–1128.

Ardiansyahmiraja, B., Andajani, E., & Wicaksono, A. (2024). Effects of e-servicescape dimensions on online food delivery services' purchase intention. *Journal of Foodservice Business Research,* https://doi.org/10.1080/15378020.2023.2227142

Ashton, M., Tuomi, A., & Backman, P. (2023). Ghost production: Applying the Servduction model to establish a typology and propose a research agenda for on-demand restaurant food delivery. *Journal of Hospitality and Tourism Insights, 6*(5), 1730–1754.

Cai, R., Leung, X., & Chi, G. (2022). Ghost kitchens on the rise: Effects of knowledge and perceived benefit-risk on customers' behavioral intentions. *International Journal of Hospitality Management*, *101*(Feb), 103110.

Chatterjee, R., Singh, A., & Singh, V. (2022). Ethical and sustainable perceptions on cloud kitchen business - A study of consumers and stakeholders during the Covid-19 pandemic. *International Journal of Hospitality and Tourism Systems,* 15(COVID-19), 76–87.

Chen, M., & Hu, M. (2024). Courier dispatch in on-demand delivery. *Management Science, 70*(6), 3789–3807.

Chern, B., & Ahmad, F. (2020). Supply chain evolution: A study of opportunities and challenges of virtual kitchens in Malaysia. *Journal of Critical Reviews, 7*(16), 361–368.

Choudhary, N. (2019). Strategic analysis of cloud kitchen - A case study. *Management Today, 9*(3), 184–190.

da Cunha, D., Hakim, M., Alves, M., Vicentini, M., & Wisniewska, M. (2024). Dark kitchens: Origin, definition, and perspectives of an emerging food sector. *International Journal of Gastronomy and Food Science, 35*(Mar), 100884.

Darekar, S., Shende, K., & Shaikh, H. (2020). To study the awareness and emerging concept of dark kitchen from the customer's perspective. *Journal of Xidian University, 14*(5), 602–612.

Deepak, B., Radhika, P., Baba, M., & Chary, S. (2022). A study on financial feasibility of cloud kitchen firms in Hyderabad region in Telangana, India. *Asian Journal of Agricultural Extension, Economics & Sociology, 40*(10)), 342–350.

El Hajal, G., & Rowson, B. (2021). The future of hospitality jobs: The rise of the gig worker. *Research in Hospitality Management, 11*(3), 185–190.

Farrell, D., & Greig, F. (2016). Paychecks, paydays, and the online platform economy: Big data on income volatility. *Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association, 109*, 1–40.

Fridayani, H., Iqbal, M., & Atmojo, M. (2021). Cloud kitchen: Strategy for Indonesian culinary business (SMEs) growth during and post-pandemic era. *Management Research and Behavior Journal, 1*(2), 41–46.

Ghazanfar, U., Kaluvilla, B., & Zahidi, F. (2023). The post-COVID emergence of dark kitchens: A qualitative analysis of acceptance and the advantages and challenges. *Research in Hospitality Management, 13*(1), 23–30.

Ghosh, K., & Reddy, V. (2021). Culinary transitions: Understanding the kitchen space through advertisements. *Rupkatha Journal on Interdisciplinary Studies in Humanities, 13*(4), 1–10.

Giousmpasoglou, C., Ladkin, A., & Marinakou, E. (2024). Worker exploitation in the gig economy: The case of dark kitchens. *Journal of Hospitality and Tourism Insights, 7*(1), 414–435.

Gonzalez-Aleu, F., Hernandez, J., Ramirez, R., Linares, C., Peinado, J., & Daniel, J. (2022). Strategic planning for repurposing kitchen equipment production operations during COVID-19 pandemic. *Operations Management Research, 15*(3-4), 1241–1256.

Goods, C., Veen, A., & Barratt, T. (2019). "Is your gig any good?" Analysing job quality in the Australian platform-based food-delivery sector. *Journal of Industrial Relations, 61*(4), 502–527.

Hakim, M., Libera, V., Zanetta, L., Nascimento, L., & da Cunha, D. (2022). What is a dark kitchen? A study of consumer's perceptions of deliver-only restaurants using food delivery apps in Brazil. *Food Research International, 161*(Nov), 111768.

Hakim, M., Libera, V., Zanetta, L., Stedefeldt, E., Zanin, L., Soon-Sinclair, J., Wisniewska, M., & da Cunha, D. (2023). Exploring dark kitchens in Brazilian urban centres: A study of delivery-only restaurants with food delivery apps. *Food Research International, 170*(Aug), 112969.

Howarth, J. (2023, December 20). *20 disruptive ghost kitchen startups.* https://explodingtopics.com/blog/ghost-kitchen-startups

John, K. (2023). Digital disruption: The hyperlocal delivery and cloud kitchen driven future of food services in post-COVID India. *International Hospitality Review, 37*(1), 161–187.

Kaavya, K., & Andal, V. (2022). Cloud kitchen - An overview. *Neuro Quantology, 20*(7), 50–53.

Klouvidaki, M., Antonopoulos, N., Styliaras, G., & Kanavos, A. (2023). Virtual restaurants: Customer experience keeps their businesses alive. *Information, 14*(7), 406.

Kock, N. (2015). Common method bias in PLS-SEM: A full colinearity assessment approach. *International Journal of e-Collaboration, 11*(4), 1–10.

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for Information Systems, 13*(7), 546–580.

Kulshreshtha, K., & Sharma, G. (2022). From restaurant to cloud kitchen: Survival of the fittest during COVID-19 - An empirical examination. *Technological Forecasting and Social Change, 179*(Jun), 121629. https://doi.org/10.1016/j.techfore.2022.121629

Leung, X., Cai, R., Zhang, H., & Bai, B. (2024). When causal attribution meets cuisine type: How consumer power and moral identity moderate virtual kitchen patronage. *International Journal of Contemporary Hospitality Management, 36*(4), 1279–1298.

Lin, P., Peng, K., Au, W., & Baum, T. (2023). Food-delivery workers in the sharing economy: Supply-side human resource transformation. *International Journal of Hospitality & Tourism Administration, 24*(4), 491–516.

Ma, J., Webb, T., & Schwartz, Z. (2021). A blended model of restaurant deliveries, dine-in demand and capacity constraints. *International Journal of Hospitality Management, 96*(Jul), 102981. doi:https://doi.org/10.1016/j.ijhm.2021.102981

Md Fadzil, F., & Che Azmi, A. (2022). Establishing factors affecting the tax morale of individuals working in the gig economy. *Journal of Global Responsibility, 13*(2), 157–176.

Myhill, K., Richards, J., & Sang, K. (2021). Job quality, fair work and gig work: The lived experience of gig workers. *The International Journal of Human Resource Management, 32*(19), 4110–4135.

Othman, M., Nor, N., & Rosdi, W. (2021). Impact of ghost kitchen towards consumer behavioral intention during movement control order. *Journal of Islamic, Social, Economics, and Development, 8*(36), 30–37.

Popan, C. (2024). Embodied precariat and digital control in the "gig economy": The mobile labor of food delivery workers. *Journal of Urban Technology, 31*(1), 109–128.

Recuero-Virto, N., & Valilla-Arrospide, C. (2022). Forecasting the next revolution: Food technology's impact on consumers' acceptance and satisfaction. *British Food Journal, 124*(12), 4339–4353.

Rosette, J. (2024). Platform kitchens and the remaking of food service. *New Labor Forum, 33*(2), 78–88.

Shapiro, A. (2023). Platform urbanism in a pandemic: Dark stores, ghost kitchens, and the logistical-urban frontier. *Journal of Consumer Culture, 23*(1), 168–187.

Shroff, A., Shah, B., & Gajjar, H. (2022). Online food delivery research: A systematic literature review. *International Journal of Contemporary Hospitality Management, 34*(8), 2852–2883.

Talamini, G., Li, W., & Li, X. (2022). From brick-and-mortar to location-less restaurant: The spatial fixing of on-demand food delivery platformization. *Cities, 128*(Sep), 103820.

Tayeb, Z. (2021, October 24). *This ghost kitchen pioneer, which pays delivery drivers up to $88,000 a year, says a happy and well-paid workforce is the key to its success.* https://www.businessinsider.nl/this-ghost-kitchen-pioneer-which-pays-delivery-drivers-up-to-88000-a-year-says-a-happy-and-well-paid-workforce-is-the-key-to-its-success/

Vu, O., Alonso, A., Tran, T., & Nicholson, G. (2023). Illuminating the dark kitchen business model – A knowledge-based perspective from the supply-side. *Journal of Hospitality and Tourism Management, 55*(Jun), 318–331.

Wrycza, S., & Maslankowski, J. (2020). Social media users' opinions on remote work during the COVID-19 pandemic - Thematic and sentiment analysis. *Information Systems Management, 37*(4), 288–297.

Wu, Q., Zhang, H., Li, Z., & Liu, K. (2019). Labor control in the gig economy: Evidence from Uber in China. *Journal of Industrial Relations, 61*(4), 574–596.

ABOUT THE AUTHORS

Dr. Daryl Cornell is currently the Chief of the Center for Research Dissemination and Linkages of the Research Management Office of the Polytechnic University of the Philippines. Dr. Cornell is the Founding President of the Philippine Association of Researchers for Tourism and Hospitality, Inc. the first and only professional organization in the Philippines devoted solely to advocating tourism and hospitality research.

▶ Contact: darylace.cornell@gmail.com

Jay-R Manamtam is a Research Coordinator at the Polytechnic University of the Philippines, College of Education Faculty. He has a Master of Arts in Education with a major in Mathematics Education.

▶ Contact: jamanamtam@pup.edu.ph

Dr Aaron Tham is the Subject Component Lead in Tourism, Leisure and Events at the University of the Sunshine Coast. He is a Senior Fellow of the Higher Education Academy and Emerald Publishing's first Ambassador based in Australia. Aaron is also the Managing Editor of the International Journal of Hospitality and Tourism Administration.

▶ Contact: mtham@usc.edu.au

DISCLOSURE

The authors declare no conflict of interest.