INFLUENCE OF SAFETY KNOWLEDGE, SAFETY MOTIVATION, PERCEIVED WORK PRESSURE ON SAFETY COMPLIANCE AMONG FOOD DELIVERY RIDERS

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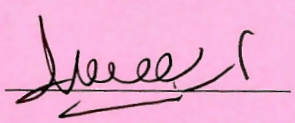
Tandatangan *(Signature)*	:	
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Abstrak

Pematuhan terhadap aspek keselamatan dalam kalangan penunggang penghantaran makanan amat penting untuk mengurangkan bahaya di tempat kerja serta melindungi kesejahteraan mereka. Kajian ini meneliti kesan pengetahuan keselamatan, motivasi keselamatan dan tekanan kerja yang dialami terhadap pematuhan keselamatan dalam kalangan penunggang p-hailing di Malaysia. Pendekatan kuantitatif digunakan melalui reka bentuk keratan rentas, dan data telah dikumpulkan menerusi soal selidik atas talian. Kajian ini menyasarkan penunggang penghantaran makanan yang aktif daripada platform utama seperti GrabFood dan Foodpanda, menggunakan kaedah pensampelan mudah. Seramai 113 responden telah mengambil bahagian. Dapatan kajian menunjukkan bahawa pengetahuan keselamatan memberi kesan positif yang signifikan terhadap pematuhan keselamatan, manakala tekanan kerja memberi kesan negatif terhadap pematuhan. Namun begitu, pengaruh motivasi keselamatan terhadap pematuhan keselamatan didapati tidak signifikan secara statistik. Penemuan ini menunjukkan bahawa walaupun peningkatan pengetahuan keselamatan adalah penting untuk memastikan pematuhan, motivasi semata-mata mungkin tidak mencukupi untuk mendorong tingkah laku yang lebih selamat. Dari segi teori, kajian ini mengembangkan Teori Kognitif Sosial (Social Cognitive Theory, SCT) dengan menunjukkan bagaimana faktor peribadi (pengetahuan dan motivasi) serta faktor persekitaran (tekanan kerja) saling berinteraksi dalam mempengaruhi tingkah laku keselamatan dalam konteks ekonomi gig. Dari segi praktikal, hasil kajian ini memberikan panduan berguna kepada pembuat dasar, penyedia platform, dan badan kawal selia untuk mereka bentuk intervensi yang lebih berfokus dalam meningkatkan keselamatan penunggang dan menangani tekanan kerja yang dihadapi.

Kata kunci: pematuhan keselamatan, pengetahuan keselamatan, motivasi keselamatan, tekanan kerja, penunggang penghantaran makanan, ekonomi gig, p-hailing

Abstract

Ensuring safety compliance among food delivery riders is essential for minimizing workplace hazards and safeguarding their well-being. This study investigates the effects of safety knowledge, safety motivation, and perceived work pressure on safety compliance among p-hailing riders in Malaysia. A quantitative approach was employed using a cross-sectional design, with data collected through an online survey. The study targeted active food delivery riders from major platforms such as GrabFood and Foodpanda, utilizing convenience sampling techniques. A total of 113 respondents participated. The results revealed that safety knowledge significantly enhances safety compliance, while perceived work pressure negatively affects compliance. However, the influence of safety motivation on safety compliance was found to be statistically insignificant. These findings suggest that while improving safety knowledge is crucial for compliance, motivation alone may not be sufficient to encourage safer behaviors. Theoretically, this research extends Social Cognitive Theory (SCT) by demonstrating how personal factors (knowledge and motivation) and an environmental factor (work pressure) interact to influence safety behaviors in the gig economy context. Practically, the results offer valuable insights to policymakers, platform providers, and regulatory bodies, enabling the design of targeted interventions to improve rider safety and address job-related pressures.

Keywords: safety compliance, safety knowledge, safety motivation, perceived work pressure, food delivery riders, gig economy, p-hailing

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Table of Contents

List of Tables

List of Figures

List of Abbreviations

WHO	World Health Organization
DOSH	Department of Occupational Safety and Health
NGO	Non-Governmental Organization
OSHA 1994	Occupational Safety and Health Act 1994
SCT	Social Cognitive Theory

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Safety compliance among delivery workers is crucial as it entails adherence to safety rules, regulations, and procedures, which helps identify and mitigate potential hazards. Delivery workers are exposed to various hazards such as unsafe road conditions, reckless road users, extreme temperatures, and biological hazards like viruses and bacteria (Zulkifly, 2023). This compliance plays a significant role in reducing the likelihood of accidents and injuries.

A study by Mai et al. (2023) highlight that organizations fostering a strong safety culture can enhance compliance, leading to improved employee well-being and overall organizational performance. By prioritizing safety compliance, companies can mitigate risks, avoid penalties, and promote sustainable business development, ultimately safeguarding the well-being of delivery workers and ensuring effective operational performance (Andrea, 2023). The World Health Organization (WHO) Global Status Report On Road Safety 2023 shows that there are 1.19 million road traffic deaths (WHO, 2023). 21 percent of all road traffic fatalities are riders of powered two- and three-wheelers such as motorcycles (WHO, 2023). Speeding, non-use of safety equipments such as motorcycle helmet, and unsafe vehicles are among the risk factors of the traffic accident (WHO, 2023).

In Malaysia, occupational accident statistics reported by Department of Occupational Safety and Health (DOSH) stated that there are a total of 6,951 accidents at workplace consisting of various sectors. Transport, Storage and Communication sector contributes to a total of 342 cases (DOSH, 2023). Food delivery service is considered as part of gig

economy sector. In Malaysia, gig workers represent 26 percent of the labor market (Santani, 2024). A total of 1,242 accidents involving food delivery riders in Malaysia were recorded from 2018 until 2022, with 112 fatalities (Ibrahim et al., 2023). According to a Harian Metro news report (Ahmad, 2022), there are 1,193 summons were released to p-hailing riders in 2021 during Ops Merah by Road Transport Department Malaysia (JPJ) due to traffic light violation. While, a total of 3,215 summons were recorded for other traffic violations including underage rider, non-use of helmets and usage of mobile phone while riding (Ahmad, 2022).

P-hailing is defined as services involving the delivery of food, drinks and parcels using motorcycles (Bernama, 2021). One of the factors contributing to the traffic violations committed by delivery or p-hailing riders is the pressure from service providers. Malaysian eHailing Alliance chief activist, Jose Rizal, said that unreasonable delivery periods imposed by some platforms force riders to violate traffic rules to meet the deadlines (Ibrahim, 2024). It increases the chances of road accidents involving both riders and other road users. The low amount paid per trip also pressures riders to ride faster and to try and fit in as many deliveries as possible to get the most money. Adding to these woes, certain platforms penalize riders for late deliveries, impacting their service ratings and possibly putting their livelihood at risk (Ibrahim, 2024).

To understand the factors influencing safety compliance among p-hailing riders, this study is grounded in Albert Bandura's Social Cognitive Theory (SCT). SCT posits that human behavior is the result of interactions between personal, behavioral, and environmental factors (Bandura, 1986, as cited in Cheung & Chan, 2000). In the context of safety, this theory supports the view that individual capabilities (e.g., safety knowledge and safety motivation) and environmental stressors (e.g., perceived work

pressure) can significantly influence safety compliance. SCT emphasizes concepts such as self-efficacy and reciprocal determinism, highlighting that individuals are not only influenced by their environment but also actively shape it (Cheung & Chan, 2000; Nickerson, 2024).

Safety knowledge is one of the many different factors that affect safety compliance. Safety knowledge refers to the understanding and awareness of safety requirements, procedures, and practices within a workplace (Hejduk et al., 2020). Safety compliance is directly impacted by safety knowledge among workers. For example, a study about Ghanaian's construction industry highlighted a direct link with higher levels of knowledge, regarding health and safety practices, with health and safety compliance being higher among construction workers. As in, the higher the level of knowledge, the higher the compliance toward safety among the workers (Aidoo et al., 2024). Compliance is important as it contributes to project performance and productivity. Thus, it is important to improve safety knowledge. This is because compliance of safety regulations and improved project performance are supported by the improvement of safety knowledge. This proves that it is appropriate to invest in safety training and safety ongoing education in the construction industry.

Another factor that contributes to safety compliance is safety motivation. Safety motivation refers to the drive or incentive for employees to adhere to occupational safety measures, based on both external and internal factors (Rakić & Živković, 2020). There is autonomous motivation. This concept refers to an individual acts out of their own initiative based on their own values and beliefs. There is also identified motivation, where an employee recognizes and understands the desire or necessity for a safe work environment. As indicated in a study by Basahel (2021), safety motivation is very

important for safety compliance in electrical substation construction projects. Safety motivation is depicted in the research to positively impacts workers' compliance with safety protocols. With high motivation, workers are encouraged to be safer and improve compliance on safety rules and regulations.

Perceived work pressure is also a factor that influences safety compliance. Perceived work pressure refers to the personal experience of stress or demands employees perceive in their job over time from various issues or challenges, which lead them feeling overwhelmed to meet certain performance expectations (Zhou et al., 2024). Perceived work pressure includes situations where there are high workload, time constraints, and resource shortages, which can lead to disorganization and regulatory failures (Lamm et al., 2017). The importance of pressure toward the effect of safety compliance can be both in positive and negative point of view (Lamm et al., 2017). Pressure can induce the thought on the importance of safety, leading to compliance. However, it may have an adverse effect of decreased compliance and psychological distress. A paper by Bensonch et al. (2022) demonstrate that pressure from management and regulatory agencies contributes to safety compliance. The study presents that high-pressure environment could encourage the employees to demonstrate higher compliance with safety practices and procedures. This is in order to fulfill the expectation by the company and to follow requirements, where breaching them might cause legal consequences or penalties. However, excessive pressure may still result in shortcuts or neglect of safety practices as well. With that being said, pressure can enhance compliance, but it must be moderated to avoid unintentional negative outcomes in safety behaviors.

This study examines the effects of safety knowledge, safety motivation, and perceived work pressure on safety compliance among food delivery riders in Malaysia. Through the lens of Social Cognitive Theory, this research aims to identify the key contributors to safety compliance and provide evidence-based recommendations for policy-making, training programs, and interventions in the gig economy.

1.2 Problem Statement

A research study is typically conducted when problems or gaps are identified in previous studies or existing literature. These gaps may include limited findings, inconsistent results, or a lack of focus on specific variables or populations. Identifying such gaps helps researchers justify the need for further investigation on the topic. The main purpose of the study is to address these shortcomings and contribute new insights or evidence to the field. By doing so, the research aims to strengthen existing knowledge and guide future studies or practical applications.

Firstly, practical gap present in this study. Practical gap is a practical-knowledge (action-knowledge) conflict arises when the actual behavior of professionals is different from their advocated behavior (Miles, 2017). This study focussed on the gig economy workers. It is specifically regarding food delivery riders, which is also known as p-hailing. Transport Minister of Malaysia reported that a total of 1,242 accidents involving food delivery riders in Malaysia were recorded from 2018 until 2022, with 112 fatalities (Ibrahim et al., 2023). According to additional reports, the Self-Employed Social Security Scheme (SKSPS) recorded 1,204 accident cases and 25 fatalities across the goods, food, and passenger transport sectors. The data also indicates a significant rise of 158.9 percent in accident cases, from 723 in 2021 to 1,872 in 2022 (Bernama, 2023). Notwithstanding, one of the reasons that lead to road accidents among the riders

could be due to the traffic offences that are commited by p-hailing riders (Ibrahim, 2024).

Study by Malik et al. (2023) reported that almost half of the total respondents (19,803 food delivery riders) stopped their motorcycles after the stop line, followed by 10.7 percent of the respondents run over the red light and various other traffic violations. These statistics indicate that there exists a wide gap between how p-hailing riders are supposed to act versus their actual behaviour, especially in following road safety regulations. While these riders are expected to follow safety protocols, high accident and fatality rates among them suggest otherwise. A number of observational and statistical investigations indicate that work pressure, traffic infractions, and issues with safety practices are among the contributing factors. Thus, in order to understand the systemic challenges faced by p-hailing riders, and the factors that underlie the differences, is essential. The knowledge gained from this study seeks to provide a source of information for policymakers and merchant platforms to develop and implement effective interventions that improve compliance, decrease accidents, and promote a stronger safety culture in the p-hailing industry.

Besides that, evidence gap also exist in this study. Evidence gap, which is also known as contradictory evidence gap, exists when there are contradictions in the findings of the same variable from different researches (Miles, 2017). There are studies contradicting in the findings of the relationship between safety motivation and safety compliance, such as the study conducted by Tedone et al. (2022) and Ansori et al. (2021). Tedone et al. (2022) stated that employees with high motivation are more likely to perform any actions at the workplace with safe conduct. Safety tends to become a priority by them. Conversely, Ansori et al. (2021) finds it insignificant. It is reported

that the study's main concern is to observe the safety climate, safety motivation and safety knowledge toward safety compliance and safety participation in SMEs. The results obtained from the study show that safety motivation has a positive significant effect on safety participation only, not on safety compliance. Similarly, study by Aidoo et al. (2024) associated the higher levels of knowledge regarding health and safety practices with increased compliance. This study shows that adherence to safety measures could be improved by enhancing workers' knowledge, ultimately resulting in safer construction environments.

Nevertheless, a study by Adebiyi et al. (2020) found that construction workers had an average level of knowledge regarding health and safety information, but their compliance with this information was low. While there was a strong positive correlation, the relationship was not significant, indicating that knowledge alone does not guarantee safety compliance. Furthermore, research paper by Black et al. (2019) highlighted that high pressure to perform can lead to increased safety compliance among workers. In contrast, a study by Saleem et al. (2022) indicated that higher levels of work pressure can lead to decreased safety compliance among workers, as they may be overwhelmed and unable to focus on safety protocols. The contradictions highlighted above demonstrate the existence of evidence gaps. These inconsistencies underscore the need for further investigation to clarify these relationships, particularly in the context of p-hailing riders. By doing so, this research contributes to resolving ambiguities in the literature and provides a clearer understanding of these variables within a unique occupational setting.

Furthermore, methodological gap also present in this study. Methodological gap occurs when there is a variation of methods used in researches to obtain findings (Miles, 2017).

For example, in existing study, different methods are used to collect data such as in-depth interviews (Christie & Ward, 2019), where 48 in-depth interviews with gig economy workers and managers to explore their experiences and perceptions of risk and safety are conducted. While, Nguyen-Phuoc et al. (2024) used onsite surveys method with a large number of participants, where the surveys were conducted in public places. While these studies provided valuable insights on gig economy workers, they primarily focus on qualitative and face-to-face survey methods, which may have some limitations. To address this gap, this study employs a quantitative approach using an online survey to collect data from p-hailing riders in Kedah. This method ensures accessibility for respondents, reduces geographical constraints, and facilitates the collection of a large dataset for statistical analysis. By doing so, this study seeks to offer a thorough, data-based insight into the factors affecting safety compliance among p-hailing riders, addressing the methodological gap highlighted in previous researches.

Lastly, there is population gap in this study. Population gap occurs when there is a lack of researches done regarding a certain population (Miles, 2017). In this case, there is a limited study that use food delivery riders as sample population. Most existing studies focussed on the traditional workplace settings such as construction and healthcare. For example, Aidoo et al. (2024) focused on the workers in Ghanaian's construction industry, revealing that higher levels of safety knowledge are associated with increased compliance with health and safety practices. While, Ugwu et al. (2020) explored the employees' adherence to safety behaviors in the healthcare industry. Other than that, study by Basahel (2021) measured safety motivation using surveys collected from workers in electrical construction projects.

Whereas, Adebiyi et al. (2020) focused on the effect of knowledge toward compliance among construction workers. The population gap identified highlights the limited research specifically focusing on food delivery riders. It is a growing segment within the gig economy. While numerous studies explore safety-related behaviors, knowledge, and compliance, these studies predominantly examine traditional workplace settings such as construction, healthcare, and other established industries. However, these contexts differ significantly from the gig economy's unique challenges, particularly those faced by food delivery riders. This gap is particularly relevant as p-hailing riders experience distinct risks, pressures, and working conditions that are not adequately addressed by studies in conventional sectors.

Addressing the identified practical, evidence, methodological, and population gaps in this study contributes meaningfully to both academic literature and real-world practice. By examining the discrepancy between expected and actual safety behaviors of p-hailing riders, the study offers practical insights that can inform policy and safety interventions in the gig economy. Resolving conflicting findings related to safety knowledge, safety motivation, and perceived work pressure enhances theoretical clarity and deepens the understanding of how these variables influence safety compliance. Employing a quantitative, online survey approach responds to methodological limitations of prior studies, enabling broader data collection from a hard-to-reach population. Lastly, by focusing specifically on food delivery riders, an understudied but growing segment of the workforce, the study fills a population gap, providing evidence-based recommendations tailored to their unique risks and working conditions.

1.3 Research Questions

Following from the previous parts, this study is designated to answer the following research questions:

1. Does safety knowledge significantly influence safety compliance?
2. Does safety motivation significantly influence safety compliance?
3. Does perceived work pressure significantly influence safety compliance?

1.4 Research Objectives

The objectives of this research are as follows:

1. To investigate the significant influence between safety knowledge and safety compliance.
2. To investigate the significant influence between safety motivation and safety compliance.
3. To investigate the significant influence between perceived work pressure and safety compliance.

1.5 Significance of the Study

1.5.1 Practical contribution

This research offers important perspectives on the compliance of p-hailing riders towards safety that could be used to design policies and interventions by the relevant authorities such as the Ministry of Transport, Social Security Organisation (SOCSO) as well as NGOs like *Persatuan Penghantar P-hailing Malaysia* and *Persatuan Perpaduan Rakan Penghantar Malaysia*. Understanding the factors that influence safety compliance, specifically safety knowledge, safety motivation, and perceived

work pressure, can not only help making relevant recommendations regarding riders' safety training programs and evaluation of delivery time, but also enable relevant stakeholders to develop new policies to improve riders' working conditions. Moreover, the results of this study can assist governmental and non-governmental organizations to enhance accident prevention programs specifically designed for p-hailing riders.

1.5.2 Empirical contribution

This research adds to the growing body of empirical knowledge on occupational safety within the gig economy, with a focused emphasis on p-hailing riders, a population that has been underrepresented in past studies. Unlike much of the existing literature that concentrates on traditional sectors such as construction or healthcare, this study specifically investigates safety compliance among food delivery riders in Malaysia, addressing a distinct occupational context with unique risks and challenges. By applying a quantitative research design and collecting data through online surveys from riders in Kedah, this study introduces a methodologically accessible and scalable approach that contrasts with the qualitative or face-to-face methods used in prior research. This enables the generation of broader, generalizable insights into the safety behaviors of a widely dispersed and mobile workforce. The empirical findings produced are valuable for academics, practitioners, and policymakers seeking to understand, evaluate, and address safety issues in the evolving gig economy landscape.

1.5.3 Theoretical contribution

This research is both an empirical and theoretical contribution to the development of models and theory related to safety compliance, since it both integrates and expands existing theoretical models of safety compliance in the gig economy. This study adds important knowledge on factors influencing safety compliance through its focus on

safety knowledge, safety motivation, and perceived work pressure. Again, these results may challenge or extend existing safety compliance models, such as Bandura's Social Cognitive Theory, while being emphasized on p-hailing riders specifically. This theoretical contribution enhances literature on safety management in the gig economy and creates possibilities for future research.

1.6 Scope of the Study

The purpose of the endeavor is to explore the connections between the variables inlvolved in this study. It is further explained on how these variables contribute to the likelihood that food delivery workers engage in safety behaviors such as wearing safety equipment, following road safety behavior, and utilizing safe behaviors effectively when delivering food or drink. Safety knowledge, safety motivation, and perceived work pressure were selected as independent variables (IV) for the study and were investigated for their influence on safety compliance. Safety knowledge and safety motivation can be influential for compliance of safety but potential perceived work pressure could effectively preclude safety behaviors, making the respondents' perceptions of work pressure potentially significant for delivering safe outcomes.

To investigate this, a quantitative research strategy using a cross-sectional survey approach has been utilized. The respondents for this study were delivery riders from Grabfood and Foodpanda who deliver food or drink in Kedah. Kedah was purposefully selected as the research site due to its concerning road safety statistics. Recent data from the Kedah Police Department revealed an increase in accident cases from January to June 2024 compared to the same period in 2023, with 14,319 cases recorded. Notably, Kuala Muda district ranked third nationwide for fatal accidents, following Kuala Lumpur and Kajang (Zulkiffli, 2024). These figures underscore the urgency of studying

rider safety within this high-risk environment, where daily exposure to traffic hazards is particularly pronounced for p-hailing riders.

The data collected through an online questionnaire examined multiple factors that influence riders' commitment to maintaining safe practices while performing delivery tasks. The survey aimed to capture key elements that contribute to their work behavior and overall adherence to safety measures in their daily operations. The data obtained are used in analyzing safety knowledge, safety motivation, perceived work pressure and intended safety compliance for establishing recommendations to improve safety delivery systems through improving occupational safety standards for delivery workers in Malaysia.

The decision to focus on Kedah provides a targeted lens through which the safety challenges of p-hailing riders can be analyzed in a region experiencing critical safety concerns. However, while the findings offer valuable insights, the geographic limitation to Kedah may influence the generalisability of the results to all p-hailing riders in Malaysia. Variations in infrastructure, urban density, and traffic regulations across other states may produce different outcomes. Nevertheless, the study’s findings serve as a critical foundation for further research across other regions and contribute to the national conversation on occupational safety for gig workers. This research holds the potential to significantly impact both the delivery industry and public policy in Malaysia by identifying key drivers of safety compliance and highlighting areas for improvement. The contribution of the research is significant on occupational safety field of study in the gig economy and offer empirical evidence for enhancing safety protocols, ultimately benefiting workers, employers, and the broader community.

1.7 Definition of Key Terms

1.7.1 Safety Compliance

Safety compliance refers to the adherence to laws, regulations, and standards designed to prevent occupational accidents and protect workers' rights (Andrea, 2023).

1.7.2 Safety Knowledge

Safety knowledge refers to the understanding and awareness of safety requirements, procedures, and practices within a workplace (Hejduk et al., 2020). It encompasses both tacit (implicit) knowledge, which is gained through personal experience and intuition, and explicit (formal) knowledge, which is documented and taught through training and guidelines.

1.7.3 Safety Motivation

Safety motivation refers to the drive or incentive for employees to adhere to occupational safety measures, influenced by both external and internal factors. It encompasses autonomous motivation, where individuals act on their own initiative aligned with personal values, and identified motivation, where employees recognize the importance of a safe work environment (Rakić & Živković, 2020).

1.7.4 Perceived Work Pressure

Perceived work pressure is defined as the subjective feeling of work stress felt by an individual due to work demands and expectations (Silaban et al., 2022). It is also defined as the personal sense of stress or demands that employees experience in their job by various challenges and expectations, leading them to feel overburdened to meet certain performance standards (Zhou et al., 2024).

1.8 The Organisation of the Study

There are five chapters constructed, each designed to provide a comprehensive exploration on the factors influencing safety compliance among food delivery riders. Chapter 1 is Introduction. It presents a comprehensive summary of the study, covering various key aspects. It includes an introduction to the research background, a detailed discussion of the problem statement, and a clear articulation of the research questions and objectives. Additionally, it emphasizes the significance of the study, defines essential terms, and outlines the scope and structure of the research.

Chapter 2 is Literature Review. It is a chapter with the presentation of a systematic review of existing literature pertinent to the study. This chapter explores previous research on safety compliance, safety knowledge, safety motivation and perceived work pressure in occupational settings. Furthermore, the chapter discusses important theories and models that provide the theoretical basis for this whole ordinance.

Chapter 3 is Research Methodology. It is a chapter that provides the description of the research design, the methodology, and the procedures used in the study. This chapter describes the research framework, the development of hypotheses, and the operational definitions of variables in the study, and describes the measurement of variables, the sampling methods, data collection procedures, the pilot test, and the techniques of data analysis. It is presenting a clear and thorough description of how data will be collected and analyzed in order to address the research questions.

Chapter 4 is Results, presents the findings of the study. It provides an overview of the results of the data analysis including descriptive statistics, tests of hypotheses, and other relevant findings. The results are presented in tables, charts and figures to summarize

the data, and includes a narrative describing the implications of the results, in relation to the research objectives.

Chapter 5, Discussion, interprets the findings and discusses their implications, where the findings of the study are related to the theoretical framework and the literature reviewed in Chapter 2 with conclusions of the study. It also discusses any limitations of the study and suggests directions for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The recent existing literature on the topic of discussion, between 2019 to 2025, are systematically analyzed. As part of the literature reviews, the chapter will review and discuss the dependant variable (DV), which is safety compliance, and the indepent variables (IVs): safety knowledge, safety motivation, and perceived work pressure. It will then discuss the relationship of each IV with the DV.

2.2 Safety Compliance

Safety compliance is the dependant variable of this study. Safety compliance is defined as the adherence to laws, regulations, and standards designed to prevent occupational accidents and protect workers' rights (Andrea, 2023). This means a commitment to safeguarding occupational health and safety in all business activities, including continuous risk evaluation, training, and drafting preventive compliance documentation. Effective safety compliance programmes not only protect the lives and health of employees but also enhance the prospects of business development and minimise the risk of non-compliance with legal obligations. According to Dahl (2013), safety compliance involves following established regulations and procedures aimed at ensuring workplace safety. Compliance can be perceived as both intentional and unintentional adherence to safety protocols, primarily closes around ensuring that workers have sufficient knowledge of the rules and procedures that oversee their job to prevent accidents, thereby improving safety as a whole. Meanwhile, a study by Hu et al. (2020) differentiated between deep compliance and surface compliance, where it asserted that safety compliance is about adherence beyond the surface level and should

be reflected in the organization through its culture and practices. Surface compliance can easily occur when organizations check safety off a list, only focused on meeting minimum legal requirements and avoiding legal trouble, and not truly creating a safety-oriented environment, whereas deep compliance is concerned with the underlying commitment to safety.

As stated by International Labour Organization (2023), nearly three million workers die every year due to work-related accidents and diseases, while work accidents account for 330,000 deaths. Increased force for industrialization and economic growth in Malaysia has been accompanied by rising workplace safety concerns. The challenge to ensure consistent regulatory implementation across industries and among varying workforce segments remains even while the regulatory framework served is Occupational Safety and Health Act 1994 (OSHA 1994).

Notwithstanding, study by Yacob et al. (2022) focused on road safety legal compliance among Malaysian motorcyclists, which includes delivery riders. The importance of awareness regarding legal compliance to enhance road safety is highlighted through the study. The study found that generally good knowledge and attitude towards road safety regulations are exhibited by motorcyclists, including delivery riders. However, common errors made by motorcyclists while riding is also discussed in the study, indicating that while awareness is present, there may still be areas for improvement in compliance and safety practices among delivery riders. Meanwhile, Abd Murad and Mokhtar (2024) highlighted that many riders may break traffic regulations, contributing to an increase in road traffic accidents.

2.3 Safety Knowledge

Safety knowledge refers to the understanding and awareness of safety requirements, procedures, and practices within a workplace (Hejduk et al., 2020). According to Nosary and Adiati (2021), safety knowledge is denoted as the employees' understanding regarding hazards, regulations, and procedures in relation to the safety at the workplace. The awareness of potential dangers, the rules governing safety practices, and the operational procedures necessary to mitigate risks are included. Safety knowledge in process industries refers to the well-defined and formalized understanding of safety management systems, including internal safety knowledge repositories and shared knowledge through standard codes, guidelines, and good practices (Agnello et al., 2009). While in term of road safety, safety knowledge is referred as the understanding of methods and measures that reduce the individuals' risk of being killed or seriously injured while using the road. It encompasses the understanding of essential rules, traffic lights, signs, and signals, as well as safe practices (Kesar & Sohi, 2020). This knowledge is crucial for protecting oneself and others from life-threatening conditions and preventing complications arising from traffic accidents.

A study by Ain et al. (2022) highlighted that food delivery riders in Shah Alam possess varying levels of food safety knowledge, attitudes, and practices. Although they are not required to take formal food safety courses, their attitudes significantly mediate the relationship between their knowledge and practices regarding food safety. It is indicating that the enhancement of compliance among food delivery riders could be acquired through a targeted food safety education intervention programs, ultimately aiming to reduce foodborne disease outbreaks linked to their delivery practices. While Dhanapal et al. (2024) stated that, companies can improve delivery riders' safety on the

job by equipping them with knowledge about safe driving practices, traffic regulations, and hazard recognition. Such proactive measures may help in reducing traffic incidents involving riders, eventually benefiting both the riders and the delivery sector. The benefits of safety knowledge for delivery riders include enhancing their awareness of road regulations and safe riding practices, which can significantly reduce the likelihood of traffic violations and accidents (Abd Murad & Mokhtar, 2024). Such an understanding enables the riders to make appropriate decisions on the roads, which translates into safer delivery experiences. On the other hand, Foodpanda further expressed its commitment to the delivery riders by the introduction of 'panda hearts' in Malaysia ("Foodpanda reaffirms its commitment", 2024). This was a program done in partnership with the Ministry of Youth and Sports to offer Technical and Vocational Education and Training Industry (TVET) to the Foodpanda delivery partners ("Foodpanda reaffirms its commitment", 2024), eventually strengthening the importance of knowledge for food delivery riders.

2.3.1 The relationship between safety knowledge and safety compliance

Taylor et al. (2023) systematically reviewed physical and psychological hazards in the gig economy. It emphasizes the substantial impact of great understanding on safety toward the adherence to safety regulations among gig economy workers. The paper suggested that when workers are knowledgeable about safety protocols and risks, the chances for them to adhere to safety measures increase.

Furthermore, the research by Christie and Ward (2019) highlighted a lack of safety knowledge being imparted during the safety training among gig economy workers, particularly those on two wheels. Training was seen by many participants as bare-minimum, which results in poor understandings of safety related practices. This lack of

safety knowledge associates with poor safety compliance among workers. The correlation can be seen as workers are reported engaging in risky behaviors like speeding and using phones while driving.

In addition, Mai et al. (2023) found a substantial correlation between safety knowledge and safety compliance among food delivery riders. It indicates that riders are more inclined to adhere to safety protocols while performing their duties when they are equipped with comprehensive safety knowledge. Safety knowledge is also recognized as a mediator between safety equipment and safety compliance. It suggests that for compliance to be achieved, it is an essential to understand safety rules and procedures thoroughly, ultimately improving workplace safety and reducing risky riding behaviors (Mai et al., 2023).

Notwithstanding, Ain et al. (2022) found a significant relationship between food safety knowledge and safety practices among food delivery riders, indicating that higher knowledge correlates with better compliance in food safety measures. Additionally, through the research, the attitude of food delivery riders is revealed to mediate this relationship. It suggests that while knowledge is crucial, a positive attitude towards food safety practices enhances compliance. This highlights the importance of knowledge in ensuring food safety among delivery riders. Furthermore, Mat Isa et al. (2021) indicated that a positive relationship between the acquisition of safety knowledge and compliance with safety culture. Safety knowledge records the highest correlation among the factors influencing safety compliance, contributing significantly to the overall safety culture in organizations.

Moreover, study by Ansori et al. (2021) reported that safety knowledge influence safety compliance among workers in Indonesian SMEs, specifically in the metal

manufacturing sector. In addition, through a study by Qian et al. (2024), food delivery riders' high self-evaluation of their safety knowledge is significantly associated with fewer abnormal riding behaviors. Their perceptions of risk severity and their attitudes toward traffic laws facilitate in the building of this relationship.

2.4 Safety Motivation

Safety motivation is referred as the drive or incentive for employees to adhere to occupational safety measures, influenced by both external and internal factors (Rakić & Živković, 2020). It encompasses autonomous motivation, where individuals act on their own initiative aligned with personal values, and identified motivation, where employees are priotizing a safe workplace condition in any situation. Fabiano et al. (2020) highlight that safety motivation consists of two components, which are controlled and autonomous. Controlled safety motivation is influenced by external pressures or obligations, whereas autonomous safety motivation is driven by an individual's internal values and beliefs about safety. Similarly, Neal and Griffin (2006) define safety motivation as the willingness of a person to put in effort to perform safety behaviors, along with the perceived significance of those behaviors.

Various workplace factors, including job autonomy, performance feedback, technological support, and overall job resources, play a crucial role in fostering safety motivation among food delivery riders. These elements help drive both essential safety practices and additional proactive safety behaviors (Nguyen-Phuoc et al., 2024). A study by Luca Boniardi et al. (2024) highlighted concern related to food delivery riders in Milan, which is regarding their safety motivation on occupational safety and health. It suggests that riders' motivation to prioritize safety might be impacted by the transient nature of their work and unique environments. Job insecurity, lack of support from

management, and insufficient training can weaken workers' commitment to safe behavior. A study by Mohd et al. (2022) on young Malaysian workers found that proactive motivation is a strong predictor of proactive safety behavior. It is indicated that proactive motivation could be divided into two central dimensions, including the "Can-do" and the "Reason-to" elements. The first one seems to be attached to self-efficacy. That is, when individuals have confidence in their capacity to perform, they tend to prepare for safety. On the other hand, the later element encourages an underlying motive which would make the person carry out safety behavior. This suggests that those young workers who have belief in their ability to deliver and understand the benefits from safety practices are more likely to act in advance in enhancing safety at the workplace.

2.4.1 The relationship between safety motivation and safety compliance

Nguyen-Phuoc et al. (2024) found a strong link between food delivery riders' motivation and their adherence to safety regulations. When riders are more motivated to prioritize safety, their compliance with established procedures improves. Providing supportive job resources can enhance this motivation, allowing companies to encourage greater commitment to safety protocols. This, in turn, fosters a culture of adherence to safety measures and minimizes road safety risks. Therefore, strengthening the connection between safety motivation and compliance plays a vital role in promoting safer riding behaviors.

Wallius et al. (2022) highlighted that in the transport industry, the workers that perceived higher safety motivation are more likely to portray a higher compliance toward safety. They are more inclined to comply with safety guidelines and regulations implied on them. Similarly, Tedone et al. (2022) also found that employees with higher

safety motivation are more likely to adopt behaviors that lead to a safe working environment. The relationship between safety motivation and safety compliance is recognized through the emphasis on individual factors that affect safety practices.

Additionally, according to Basahel (2021), safety compliance is positively affected by safety motivation. The study highlights a causal relationship where safety motivation positively affects safety compliance. Safety motivation was measured using surveys collected from workers in electrical construction projects. Safety motivation was considered a mediating factor in the study (Basahel, 2021). It was analyzed in terms of how it influenced safety compliance and participation.

Sandeep (2023) also emphasizes that employees' motivation was critical to their compliance with safety procedures. Workplace also gives them a sense of comfort that encourages them to perform safety compliant behavior. This means that safety compliance among employees are more likely to improve as there is an increased in motivation, which in return, increasing overall safety compliance at the workplace.

Moreover, a study by Hanifah (2025) reveales that motivated employees tend to follow safety protocols, as per the findings of the report. Employees who feel motivated are more likely to take proactive steps to mitigate workplace hazards, ensuring not only their well-being but also that of their colleagues. Thus, the development of safety motivation is critical to enhance broad safety compliance in the work environment. Similarly, a study by Hanif et al. (2025) also suggest that higher levels of safety motivation lead to improved adherence to safety protocols and practices among workers. Hence, proving a significant connection between the two factors.

2.5 Perceived Work Pressure

Perceived work pressure can be defined as the subjective feeling of work stress felt by an individual due to work demands and expectations (Silaban et al., 2022). It is also defined as the personal sense of stress or demands that employees experience in their job by various challenges and expectations, leading them to feel overburdened to meet certain performance standards (Zhou et al., 2024). This includes factors such as high workloads, tight deadlines, and inadequate resources, which can lead to disorganization and regulatory failures (Lamm et al., 2017). López-Fernández and Pasamar (2019) highlight that coercive pressures around workplace safety are defined as external factors that pressure organizations to adopt Occupational Health and Safety practices. The regulation, societal or market demands can cause the emergence of these coercive pressures. Whereas operational pressure indicates stress or demands placed on individuals, that occur either from external factors or self-imposed or both (Marsman et al, 2024).

Ahmad et al. (2023) highlighted that food delivery riders are highly exposed to Work-related Musculoskeletal Disorders (WMSDs). This problem can lead to fatigue and psychological distress. The study indicates that these factors might contribute to the overall stress and pressure experienced by riders. This is even more prominent given their extended working times and the physical demands of their job. All these factors can impact riders' well-being and productivity. While according to Abd Murad and Mokhtar (2024), food delivery riders in Malaysia face significant pressure due to the increased demand for timely deliveries. This factor may lead to risky riding behaviors and violations of traffic regulations. In this context, the pressure is built from the need to meet customer expectations and the competitive nature of the food delivery industry. Furthermore, a study by Moares and Betancor Nuez (2022) delved into the mobilization

of food delivery workers in Spain. The study noted the increasing instability of their working conditions. This research examines the pressure faced by these riders in their pursuit of transitioning from self-employment to employee status for better stability and regulation. Additionally, some self-employed riders in Spain are also mobilising for better wages and improved conditions. The situation that happened reflex a complex landscape of pressures within the gig economy that resonates with global trends in worker rights and conditions.

2.5.1 The relationship between perceived work pressure and safety compliance

Black et al. (2019) explored the relationship between pressure and safety compliance, suggesting that pressure instigates both positive and negative psychological outcomes. Pressure can lead to stigma and anxiety, ultimately reducing a worker's safety performance, even though it can also enhance compliance by pushing a worker to comply with safety measures. A systematic review by Hashemian and Triantis (2023) suggested when workers are under pressure to produce more, they compromised on safety compliance. The priorities of workers changes to meeting production goals, at the expense of safety; leading to even higher likelihoods of accidents and injury.

In another study, by Ugwu et al. (2020), found that perceived work pressure negatively effects employee compliance with safety behavior. The research focuses on the direct and interactional consequences of perceived work pressure, transformational leadership behavior and organizational management safety practices towards employee compliance to workplace safety behavior. Subsequently, through a study by Segbedzi et al. (2023), time pressure is identified as a significant barrier to compliance with food safety standards in the hotel industry. The findings identified there was a negative

correlation between pressure and safety compliance. In other words, an increased in time pressure leads to a decreased in compliance to safety standards.

According to Wang et al. (2022), performance pressure negatively impacts safety compliance among employees. Specifically, the perceived pressure for higher performance adding an amount of emotional exhaustion resulting to the decreased level of efforts in terms of compliance and participation. The performance pressure exhibit an even more notable negative effects among employees with low self-efficacy. Within the service context where performance pressure is prevalent, it is particularly important for employers to consider the consequences of this pressure on their employee's safety behaviors, as well as on their overall wellbeing.

In addition, in a study by Tran et al. (2022) found that health and safety measures were less consistent to be adopted by delivery riders who are under greater job pressure, long working hours, and financial burdens. Specifically, male, older and less-educated riders faced more pressure, leading to riskier traffic behaviors, such as speeding (Tran et al., 2022). In contrast, better compliance with health prevention measures is improved through supportive environments from companies and co-workers. Thus, safety compliance among delivery riders was negatively impacted by increased pressure during the Covid-19 pandemic (Tran et al., 2022).

Notwithstanding, study by Wang and Churchill (2024) indicated that delivery riders face significant economic pressures. This type of pressure negatively impact their safety compliance. The authors found that platform-induced economic pressures compel riders to prioritize earnings over safety. This trade-off often results in riders taking risks, such as speeding or working in hazardous conditions, to maximize their income (Wang

& Churchill, 2024). Despite being aware of the dangers, the urgency to complete deliveries and the desire to earn more lead to compromised safety practices. This situation underscores the complex relationship between economic pressure and safety compliance among food delivery workers (Wang & Churchill, 2024).

Finally, in a study by Papakostopoulos and Nathanael (2020) found that delivery riders experience a conflict between safety and performance criteria, particularly under work pressure. Consequently, not wearing a helmet was linked with fast delivery work pace and a higher than average daily tip income, indicating a mindset focused on earning money over safety compliance (Papakostopoulos & Nathanael, 2020). Conversely, inexperienced riders who were experiencing work pressure were more likely to run a red-light (Papakostopoulos & Nathanael, 2020). This shows that risky riding behavior is related to increased pressure, which has a negative effect on delivery rider safety compliance.

2.6 Related Underpinning Theories

The theoretical framework of this study was developed around constructs of identification which underpinned individual behaviors and decision-making with regard to workplace safety. The theory then proceeded to highlight the variables that can influence safety compliance, zeroing in on the experience of p-hailing riders.

The research uses Albert Bandura's Social Cognitive Theory to study the factors affecting safety compliance among p-hailing riders, including safety knoweledge, safety motivation, and perceived work pressure. This theory sets a framework that is useful in the understanding of the correlation between the variables. Bandura's Social Cognitive Theory (1986) proposes that human behavior is a result of the interaction of

personal factors and environmental influences that produce some patterned behavior. He particularly emphasized on observational learning, social experience, and reciprocal determinism in human behavior. This actually means that people not only affect but also note the change in their environment (Nickerson, 2024). SCT also emphasizes the role of self-efficacy and collective efficacy in shaping behavior, which are referred to the individuals' belief in their ability to perform a specific behavior and shared beliefs in a group's ability to achieve common goals, respectively (Cheung & Chan, 2000). In the context of safety, these concepts are highly relevant.

Following that, self-efficacy is enhanced through safety knowledge. The approach is by equipping riders with the understanding and skills needed to perform safe behaviors. For instance, if delivery riders are knowledgeable about traffic hazards or the correct use of safety equipment, the knowledge might be able to enhance their confidence in performing the actions required safely. Therefore, in such cases, riders feel motivated to work safely even in a difficult situation. Self-efficacy, as well as motivation have also been shown to be negatively correlated with perceived work pressure. Very high levels of work pressure, such as short delivery deadlines, can instill a feeling of helplessness or overwhelm and decrease riders' self-efficacy for their own safety. This supports what SCT suggests, that environmental factors, such as work pressure, sometimes act as potential enablers or constraints to behavior (Cheung & Chan, 2000).

Utilizing SCT, the relationship between safety motivation (individual factor) and safety knowledge (individual factor), and perceived work pressure (environmental factor) are examined as they relate to safety compliance (behavior). It is also important to note that the reciprocal determinism emphasized by SCT provides a holistic framework for understanding the relationships between the variables in this study. For example, while

safety knowledge and safety motivation may promote safety compliance, high perceived work pressure can undermine these efforts, creating a conflict between efficiency and safety.

Overall, SCT provides support for both the development of hypotheses in this study and offers a practical approach for improving safely compliance. Safety interventions should address both safety knowledge and perceived work pressure to promote self-efficacy for riders and create an environment that promotes safe behavior. This whole while making SCT a relevant and impactful theoretical proposition for responding to safety issues that p-hailing riders might face.

2.7 Summary of the Chapter

In summary, Chapter 2 systematically reviews recent literature from 2019 to 2025 related to safety knowledge, safety motivation, perceived work pressure, and safety compliance among p-hailing riders. The review highlights key findings and research trends that have shaped the understanding of safety behavior in the gig economy. It also identifies gaps in current knowledge, particularly in the Malaysian context, which this study aims to address. Overall, this chapter provides a comprehensive discussion of the variables involved, laying the foundation for the conceptual framework of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This study has utilized a quantitative methodology. Online questionnaire surveys were used for p-hailing riders to elicit relevant data for the study. Quantitative methodology was used for this research because of its advantages, such as measuring variables numerically, and thus enabling statistical analysis and the identification of patterns and relationships. Furthermore, quantitative research uses larger sample sizes for generalizing findings to a larger population (Mweshi & Muhyila, 2024).

3.2 Research Framework

A research framework is an organized method for analyzing and interpreting data in a research study. It acts as a model for researchers. A framework provides a way to get organized, define and clarify important terminology, and develop the structure of the study. Building a research framework is also a creative and iterative undertaking that involves a rigorous engagement with existing literature and data. This signifies that researchers can engage with their research questions in a structured manner (Betsill & Nasiritousi, 2023). A research framework is formed into a figure, which describes the DV and IVs of the study and how they relate to one another. Figure 3.1 shows the framework of this study as follows:

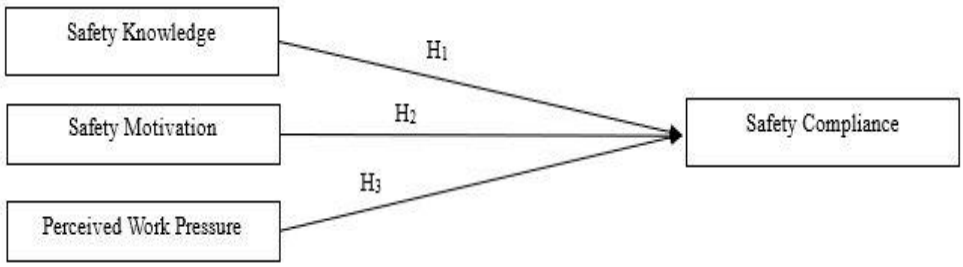

Figure 3.1
Research Framework

3.3 Hypotheses Development

The development of hypotheses is grounded in relevant theoretical frameworks and supported by findings from existing empirical studies. These hypotheses are carefully formulated to reflect the relationships between the key variables identified in the conceptual model. This alignment ensures that the study's assumptions are both theoretically sound and empirically justified.

3.3.1 The relationship between safety knowledge and safety compliance

Safety knowledge refers to the understanding and awareness of safety requirements, procedures, and practices within a workplace (Hejduk et al., 2020). According to Social Cognitive Theory (SCT), human behavior is shaped by the dynamic interaction between personal factors, environmental influences, and behavior itself (Bandura, 1986, as cited in Cheung & Chan, 2000). Within this framework, knowledge plays a vital role in determining an individual's capability to perform certain behaviors. In the context of occupational safety, when individuals are well-informed about safety risks and the correct procedures to mitigate them, they are more likely to make conscious decisions that align with safe practices. Knowledge enhances self-regulatory capacity, which in turn increases the likelihood of compliance with safety rules and behaviors.

Somoray et al. (2024) also support this by asserting that safety knowledge serves as a critical precursor to safety compliance. Furthermore, empirical evidence by Mai et al. (2023) reported a significant positive correlation between safety knowledge and safety compliance among food delivery riders. This suggests that well-informed riders are more capable of recognizing hazards and taking appropriate action to prevent accidents. Grounded in SCT and supported by empirical findings, the first hypothesis is presented as follows:

H_1: Safety knowledge significantly influence safety compliance.

3.3.2 The relationship between safety motivation and safety compliance

Safety motivation refers to the drive or incentive for employees to adhere to occupational safety measures, influenced by both external and internal factors (Rakić & Živković, 2020). Within the framework of SCT, motivation is a central personal determinant that influences behavior through processes such as self-regulation, goal setting, and outcome expectancy (Bandura, 1986, as cited in Cheung & Chan, 2000). SCT posits that individuals are more likely to engage in behaviors they believe will lead to positive outcomes and align with their goals, this includes complying with safety regulations if they are motivated by a belief in the value of safety and the expectation of beneficial results

A study by Wallius et al. (2022) found a significant relationship between safety motivation and safety compliance among workers in the transport industry. A study by Nguyen-Phuoc et al. (2024) highlight that higher safety motivation among food

delivery riders can lead to improved safety compliance. Therefore, the second hypothesis is presented as follows:

H_2: Safety motivation significantly influence safety compliance.

3.3.3 The relationship between perceived work pressure and safety compliance

Perceived work pressure can be defined as the subjective feeling of work stress felt by an individual due to work demands and expectations (Silaban et al., 2022). Perceived work pressure includes excessive workload, required high work pace, and time pressures to complete work (Seo, 2005). From the perspective of SCT, such external environmental pressures interact with personal and behavioral factors to influence how individuals act in the workplace. SCT emphasizes the principle of reciprocal determinism, where behavior is influenced not only by internal factors but also by external conditions like job stress and situational constraints (Bandura, 1986, as cited in Cheung & Chan, 2000). When individuals experience high levels of perceived work pressure, their self-regulatory capacity may be compromised, making it difficult for them to maintain attention to safety protocols.

Empirical support is found in Ugwu et al. (2020), who reported a significant negative relationship between work pressure and safety compliance, suggesting that when pressure increases, adherence to safety standards may decline. Hence, the third hypothesis is presented as follows:

H_3: Perceived work pressure significantly influence safety compliance.

In summary, the hypotheses of this study are as follows:

H_1: *Safety knowledge significantly influence safety compliance.*

H_2: *Safety motivation significantly influence safety compliance.*

H_3: *Perceived work pressure significantly influence safety compliance.*

3.4 Research Design

This quantitative study employs a non-causal investigation. The focus is on examining the associations between variables among individuals, in this case p-hailing riders. Each rider's responses are treated as a single unit, and the study investigates personal factors that influence safety compliance.

The primary objective of this study is to examine the hypotheses formulated based on the theoretical framework. A cross-sectional research design has been implemented, where data is gathered at a single point in time. This approach offers a comprehensive view of the relationships between key variables, making it an appropriate method for hypothesis testing within this research context. By utilizing this design, the study can identify patterns and associations without requiring long-term data collection. Although cross-sectional studies do not establish causality, they provide valuable insights that contribute to the broader understanding of the subject matter.

During data collection process, the researcher did not interfere with the natural behaviors and work settings of respondents. Data are collected through self-administered survey to not disrupt respondents' natural activities, or routines. This study takes place in a natural, non-contrived environment, allowing respondents to fill out the survey while engaging in their routine daily activities. In this way, the research uses a

survey without impacting or manipulating the environment or conditions to collect practical data.

3.5 Operational Definition

3.5.1 Safety Compliance

Safety compliance refers to the adherence of p-hailing riders toward safety practices, including the use of safety equipment (e.g., helmet, hands-free kit, and company-issued double barrel delivery bag), safe delivery methods, and adherence to road safety rules and regulations despite any situation.

3.5.2 Safety Knowledge

Safety knowledge refers to the understanding of safety related practices, including the proper use of motorcycle safety equipment, methods to maintain or enhance safety during deliveries, strategies to minimize risks of accidents and incidents, and the identification of job-specific hazards along with the necessary precautions to mitigate them.

3.5.3 Safety Motivation

Safety motivation refers to the intrinsic drive and personal commitment to prioritize and engage in safe delivery practices, influenced by the enjoyment of working safely, alignment with personal values, and feelings of guilt or self-disapproval when safety is compromised.

3.5.4 Perceived Work Pressure

Perceived work pressure refers to the extent to which p-hailing riders experience a sense of urgency or demand to prioritize timely delivery over safety, leading to taking

shortcuts, overlooking road safety rules, and engaging in risk-taking due to work pressure and time constraints.

3.6 Measurement of Variables/Instrumentation

Outlines of the measurement methods involved in this study are presented in this subtopic. The processes involved ensure clarity and consistency for data collection and analysis. A self-administered questionnaire is used as the research instrument. The questionnaire was developed by adapting items from previous studies. Specifically, the items measuring the independent variables—safety knowledge and safety motivation—were adapted from Guo et al. (2016), while perceived work pressure was adapted from Seo (2005). Meanwhile, the dependent variable, safety compliance, was assessed using items adapted from Vinodkumar and Bhasi (2010), as outlined in Table 3.1.

The questionnaire utilized a five-point Likert scale (Likert, 1932) to measure responses, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). This scale was chosen for its simplicity, ease of use, and proven effectiveness in capturing the intensity of respondents' attitudes and perceptions in a quantifiable manner. The five-point format is widely accepted in social science and occupational safety research due to its ability to balance response variety with clarity, reducing respondent fatigue and improving data quality (Joshi et al., 2015). Furthermore, the five-point Likert scale has demonstrated high reliability and validity in previous studies involving safety behavior and workplace attitudes. For example, prior research by Nguyen-Phuoc et al. (2024) and Somoray et al. (2024) utilized similar Likert-based instruments to measure constructs such as safety motivation and safety knowledge, reporting Cronbach’s alpha values above 0.70, indicating good internal consistency. The use of a standardized

Likert scale also facilitates comparability with other studies in the field, enhancing the generalizability and credibility of the findings.

Table 3.1
Questionnaire items

Variables	Items		Sources
	Original	Adapted	
Safety compliance (DV)	1) I use all necessary safety equipments to do my job. 2) I carry out my work in a safe manner. 3) I follow correct safety rules and procedures while carrying out my job. 4) I ensure the highest levels of safety when I carry out my job. 5) Occasionally due to lack of time, I deviate from correct and safe work procedures. 6) Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures. 7) It is not always practical to follow all safety rules and procedures while doing a job.	1) I use hands-free kit, company-issued double barrel delivery bag, and helmet during delivery. 2) I deliver food in a safe manner. 3) I follow correct road safety rules and regulations while making delivery. 4) I ensure the highest levels of safety when I make delivery. 5) Occasionally due to lack of time, I deviate from correct road safety rules and regulations. 6) Occasionally due to over familiarity with making delivery, I deviate from correct road safety rules and regulations. 7) It is not always practical to follow all road safety rules and regulations while making delivery.	Vinodkumar & Bhasi (2010)

Table 3.1 (Continued)

Variables	Items		Sources
	Original	Adapted	
Safety knowledge (IV)	1) I know how to use equipment in a safe manner. 2) I know how to maintain or improve workplace health and safety. 3) I know how to reduce the risk of accidents and incidents at the workplace. 4) I know what are the hazards associated with my jobs and the necessary precautions to be taken while doing my job.	1) I know how to use the motorcycle safety equipment (helmet, hands-free kit, boots, etc.) in a safe manner. 2) I know how to maintain or improve health and safety while making delivery. 3) I know how to reduce the risk of accidents and incidents while making delivery. 4) I know what are the hazards associated with my jobs and the necessary precautions to be taken while making delivery.	Guo et al. (2016)
Safety motivation (IV)	1) I enjoy working safely at workplace. 2) Working safely aligns with my personal values. 3) I feel bad about myself when I don't work safely. 4) I feel guilty when I don't work safely.	1) I enjoy working safely while making delivery. 2) Delivering order safely aligns with my personal values. 3) I feel bad about myself when I do not deliver order safely. 4) I feel guilty when I do not deliver order safely.	Guo et al. (2016)

Table 3.1 (Continued)

Variables	Items		Sources
	Original	Adapted	
Perceived work pressure (IV)	1) Production is given higher priority than safety. 2) We are often in such a hurry that safety is temporarily overlooked. 3) I take short cuts when I need to get the job done in a timely manner. 4) We often do not have time to do things safely. 5) It is difficult to do a job while following all of the safety rules. 6) Short cuts and risk taking are common due to the heavy workload. 7) There is a lot of pressure to complete jobs quickly.	1) Timely delivery is given higher priority than safety. 2) I am often in such a hurry to complete deliveries that safety is temporarily overlooked. 3) I take short cuts when I need to get the order delivered in a timely manner. 4) I often do not have time to deliver order safely. 5) It is difficult to make delivery while following all of the road safety rules. 6) Short cuts and risk taking are common due to high number of orders. 7) There is a lot of pressure to complete deliveries quickly.	Seo (2005)

All items in the questionnaire underwent adaptation. The purpose of the adaptation is to make sure the questionnaire are better aligned with the context of food delivery work. This adaptation ensures that the construct remains conceptually aligned with its original definition while addressing the unique challenges of the target population. The questionnaire items are translated into Bahasa Melayu through Cambridge Dictionary and back-to-back translation techniques was conducted. The items in the questionnaire

underwent a Content Validation process with a p-hailing expert and an academician who evaluate the items to determine their validity.

According to Yusoff (2019), the minimum acceptable number of experts required for validation process is two. Content validation is defined as a process that evaluates the extent to which the components of a measurement tool are relevant to and accurately represent the intended construct within a specific given assessment context (Yusoff, 2019). Ultimately, the content validation process was carried out using a remote, non-face-to-face approach. Experts were provided with an online content validation form for evaluation. Clear instructions were included to facilitate the validation process, ensuring alignment with the required protocol. As outlined by Yusoff (2019), the process of content validation involves six systematic steps. It begins with the preparation of the content validation form, followed by the selection of experts. Next, the validation process is carried out, during which the domains and individual items undergo evaluation. Experts then assign scores to each item, and finally, the Content Validity Index (CVI) is computed to assess the overall validity. Through this process, the average CVI value obtained was 0.86, which surpassed the acceptable cut-off standard of 0.80 for two experts (Davis, 1992, as cited in Yusoff, 2019). It is concluded that the questionnaire items prepared have strong content validity, indicating that they are fitting with the research's context.

3.7 Data Collection

The procedures and instruments used for data collection are described, in alignment with the purposes and hypotheses of the research. An online questionnaire was employed for data collection. It was organized into five distinct sections. Section A focused on demographic information, while Section B addressed safety compliance.

Section C covered safety knowledge, followed by Section D, which examined safety motivation. Lastly, Section E assessed perceived work pressure. Respondents completed the questionnaire by selecting the score that best reflected their personal perspective, ranging from 1 ("strongly disagree") to 5 ("strongly agree").

3.8 Sampling

Sampling is the process of selecting representative units from an entire population for research purposes. Since it is often impractical to collect data from every individual in a group, a sample is chosen to participate in the study. The selected sample must be representative of the larger population to ensure valid conclusions can be drawn (Ajithakumari, 2014). This study employed a non-probability sampling of convenience sampling method for the participant recruitment process. Convenience sampling involves selecting respondents who are easily accessible to the researcher (Galloway, 2005).

3.8.1 Population

P-hailing riders who are actively engaged in delivering orders for major platforms such as GrabFood and Foodpanda represent the focus of this study. This study focuses on p-hailing riders operating in Kedah. This area is chosen due to its significant road accident statistics. The number of road accident cases in Kedah increased from January to June 2024 compared to the same period in 2023. Kedah Police Chief, in a news article, stated that a total of 14,319 accident cases were recorded in 2024, compared to 14,230 cases in the same period in 2023. Moreover, Kuala Muda, a district in Kedah, ranked third nationwide among the 153 District Police Headquarters (IPDs) in terms of fatal accidents, following Kuala Lumpur and Kajang (Zulkiffli, 2024). These alarming statistics highlight the urgency of addressing road safety concerns in Kedah, especially

among vulnerable groups such as p-hailing riders, who are exposed to high risks due to their constant mobility. P-hailing riders were selected as the population for this study because they frequently encounter workplace safety challenges, such as traffic hazards, time pressure, and platform demands, making them an ideal group to be investigated to fulfil the research objectives. The population includes full-time and part-time active p-hailing riders registered with major delivery platforms.

3.8.2 Unit of Analysis

This study focuses on individual p-hailing riders as the primary unit for analysis. Data were gathered from each rider to explore how safety knowledge, safety motivation, and perceived work pressure influence safety compliance. This unit was chosen because safety-related decisions and behaviors are primarily determined at the individual level.

All variables were measured at the individual level. This ensures consistency between the unit of analysis and the study's objectives. While organizational factors such as platform policies were not directly analyzed, the focus on individual-level variables aligns with the study's aim to understand personal determinants of safety compliance. By concentrating on individual riders, the study provides insights into behaviors that can be directly addressed to improve safety outcomes in the gig economy.

3.8.3 Sample Size

As the exact number of active p-hailing riders is not publicly available due to the decentralized nature of the gig economy, a total of 124 participants were recruited for this study. The number of minimum sample size is obtained by using G*Power software (Faul et al., 2009). The test family selected was F-tests, with the statistical test set to Linear multiple regression: Fixed model, R^2 deviation from zero, with three predictors.

An A priori power analysis was performed to determine the minimum required sample size prior to data collection. The input parameters included an effect size of 0.15 (medium), a significance level (α) of 0.05, a power (1-β) of 0.90, and three predictors. These settings ensure sufficient statistical power to detect meaningful relationships among the variables. The total minimum sample size obtained from the G*Power analysis was 99 participants. In research studies, participant drop-out or non-compliance with study protocols is often unavoidable. To account for this, it is advisable to incorporate an estimated drop-out rate when determining the sample size. For instance, if a 20 percent dropout rate is anticipated, the initial sample size should be increased accordingly. This adjustment ensures that the study retains sufficient power despite potential participant loss (Kang, 2021). The formula for the sample size calculation with the consideration of 20 percent drop-out rate is as below:

$$N^D = \frac{N}{(1-d)} = \frac{99}{(1-0.2)} = 123.75 \cong 124$$

- N: sample size before considering drop-out
- d: expected drop-out rate
- ND: sample size considering drop-out

This adjustment resulted in a final required sample size of 124 participants, ensuring the study maintains sufficient statistical power despite potential participant pull-off.

3.8.4 Sampling Procedure

The sampling procedure refers to the steps and methods used to select participants for this study. This study employed a non-probability, convenience sampling method for

the participant recruitment process. Convenience sampling involves selecting respondents who are easily accessible to the researcher (Galloway, 2005). In this context, the researcher approached p-hailing riders from Foodpanda and GrabFood who were readily available at various public locations to participate in the survey. This method was chosen due to the decentralized nature of the p-hailing workforce, which makes it difficult to establish a formal sampling frame. Convenience sampling allowed the researcher to gather responses efficiently by targeting riders who were available and willing to participate. To ensure ethical research practices, participants were informed that their responses would remain confidential and anonymous.

3.9 Pilot Test

A pilot test was conducted to assess the reliability of the measurement scales before the full-scale data collection. The pilot study included 30 respondents, based on Central Limit Theorem, consisting of p-hailing riders from Jitra, Kedah. The data collection process was carried out over four days, during which participants completed the survey measuring safety compliance, safety knowledge, safety motivation, and perceived work pressure.

Reliability analysis was performed to determine the internal consistency of the survey items. Table 3.2 presents the Cronbach's alpha values for each variable.

Table 3.2
Reliability Statistics of Pilot Test (n = 30)

Variables	**Cronbach's Alpha**	**N of items**
Safety Compliance	0.751	7
Safety Knowledge	0.926	4
Safety Motivation	0.861	4
Perceived Work Pressure	0.839	7
Overall	**0.722**	**22**

The results indicate that all variables exhibit acceptable to excellent reliability. According to Nunnally (1978), a Cronbach's alpha value of 0.70 or higher suggests an acceptable level of internal consistency. Safety Knowledge (α = 0.926) demonstrated excellent reliability, indicating that the items measuring this construct are highly consistent. Meanwhile, Safety Motivation (α = 0.861) and Perceived Work Pressure (α = 0.839) both exhibited good reliability. Futhermore, Safety Compliance (α = 0.751) also met the acceptable threshold for reliability. The overall Cronbach's alpha (α = 0.722) suggests that the entire survey instrument is reliable for measuring safety compliance and related factors.

The pilot study results confirm that the survey items are internally consistent, supporting the suitability of the instrument for the full-scale study. Consequently, no major modifications were necessary before proceeding with data collection for the main research.

3.10 Data Collection Procedures

The data collection for this study was conducted over a period of approximately three weeks. Participants were recruited through a non-probability convenience sampling method. This approach involved selecting p-hailing riders who were readily accessible and willing to participate in the study.

Data were collected using several practical strategies to enhance response rates and reach a diverse group of riders. First, the researcher ordered food through selected merchants and invited food delivery riders to participate in the survey immediately after completing their deliveries. This allowed for direct engagement with riders in real-time. Additionally, riders encountered in public areas or during daily routines were approached and invited to take part in the survey. Close contacts of the researcher who

were also food delivery riders were included, and they were encouraged to participate voluntarily. This convenience-based approach was selected due to the decentralized and informal nature of the p-hailing workforce, which makes it difficult to construct a complete sampling frame. All participants were informed about the purpose of the study and assured that their responses would remain confidential and anonymous.

The initial target sample size was a minimum of 99 participants. To account for potential participant drop-outs or incomplete responses, a 20 percent drop-out adjustment was applied, increasing the target sample size to 124 participants. Ultimately, 113 participants completed the study, yielding a response rate that was sufficient for analysis. A post hoc power analysis was conducted to verify the statistical power of the final sample size. The results indicated an achieved power of 0.94 (94 percent), which is well above the commonly accepted threshold of 0.80. This ensures that the study maintained adequate statistical power to detect meaningful effects. The data collection phase overall was efficient and effective in creating a sufficient sample size, leveraging the process of convenience sampling provided towards certain sub-populations of p-hailing riders.

3.11 Techniques of Data Analysis

Statistical Package for the Social Sciences (SPSS) software for windows has been used to perform the statistic analysis of this study.

3.11.1 Descriptive Analysis

Descriptive analysis is the first step in understanding the essential features of the collected data. Summary statistics, including means, standard deviation, and frequency distribution for all variables, are computed using SPSS. Demographic variables and

central tendencies of Likert-scale responses are tabulated in the Descriptives and Frequencies functions under Analyze > Descriptive Statistics. As an example, it could show that test subjects had different experiences, as indicated by a large standard deviation for a perceived work pressure report. These insights help provide context for the dataset and guide further analyses by drawing attention to initial trends or inconsistencies (George & Mallery, 2022).

3.11.2 Normality Analysis

Normality test is conducted to check the usage of parametric tests. Normal Data refers to the data that are taken from a normally distributed population (Sekaran & Bougie, 2016). Normal data takes on the familiar bell-shaped form. The Kolmogorov-Smirnov Test has been applied to test the normality of the data since the sample size is greater than 50. If p value is greater than 0.05, it can be concluded that the data is normal and parametric test can be applied.

3.11.3 Reliability Analysis

Reliability is a measure of how consistently a measuring instrument measures, while validity is a measure of how well an instrument that is developed measures the particular concept that is intended. Cronbach's alpha coefficient is employed to evaluate the inter-item consistency of entire measurement items in a construct; generally, alpha values need to be greater than 0.6 according to Nunnally & Bernstein, (1994). In particular, 0.6 is adequate for a fairly new measurement tool, whereas 0.7 is satisfactory (Nunnally, 1978). The alpha value greater than 0.70 shows that the scales are internally consistent. A value greater than 0.70 is widely regarded as acceptable (Fornell and Larcker, 1981), indicating that the constructs are reliable.

3.11.4 Correlation Analysis

Correlation analysis aims to determine the bivariate associations between the factors influencing safety compliance. A correlation matrix is generated and in it Pearson coefficients are provided through SPSS's Bivariate Correlation tool (Analyze > Correlate). Overall, significant positive associations (e.g., safety knowledge and compliance) or significant negative associations (e.g., perceived work pressure and safety compliance) provide initial sustenance for the hypotheses. Table 3.3 shows the range of correlation analysis. These results provide clarification on which of the variables is most closely correlated with safety compliance and guide the interpretation of subsequent regression models.

Table 3.3
Range of Correlation Coefficient Values and the Corresponding Levels of Correlation

Range of Correlation Coefficient Values	Level of Correlation	Range of Correlation Coefficient Values	Level of Correlation
0.80 to 1.00	Very Strong Positive	-1.00 to -0.80	Very Strong Negative
0.60 to 0.79	Strong Positive	-0.79 to -0.60	Strong Negative
0.40 to 0.59	Moderate Positive	-0.59 to -0.40	Moderate Negative
0.20 to 0.39	Weak Positive	-0.39 to -0.20	Weak Negative
0.00 to 0.19	Very Weak Positive	-0.19 to -0.01	Very Weak Negative

Source: Meghanathan (2016)

3.11.5 Regression Analysis

Regression is used to examine the degree of variance in this analysis. The objective is to examine the impact or effect of independent variables (safety knowledge, safety motivation, and perceived work pressure) on the dependent variable (safety compliance) to predict the outcomes. Multiple Linear Regression (MLR) is applied because it is well-suited for examining the predictive relationship between multiple

independent variables and a single dependent variable. In SPSS, the Linear Regression function (Analyze > Regression) estimates the predictive power of the independent variables (George & Mallery, 2022).

MLR provides essential outputs such as the R^2 value, which indicates how much of the variance in safety compliance is explained by the model; ANOVA, which assesses the overall model fit; and beta coefficients and p-values, which test the significance of each predictor. The significance level is set at 0.05 to compare with the significance p-values (Kwak, 2023). If the p-value is less than 0.05, the result is considered statistically significant, indicating a meaningful relationship between the predictors and safety compliance. Conversely, if the p-value is greater than 0.05, the result is deemed not significant.

3.12 Summary of the Chapter

In summary, the overall process of how the research was conducted has been thoroughly discussed and explained in detail. The chapter outlined the research framework, including the theoretical foundation and hypothesis development based on existing literature. It also described the study design and operational definitions used to clarify the key variables under investigation. Furthermore, the methodology section covered the selection of measurement tools, sampling strategy, pilot testing procedures, and data collection methods. Lastly, the data analysis techniques employed were explained to demonstrate how the research questions and hypotheses were statistically tested.

CHAPTER FOUR

RESULTS

4.1 Introduction

The results obtained from the data collection are presented and discussed in depth. The focus is on evaluating the study's main objectives, specifically determining the validity of the hypotheses proposed in the previous section. The presentation of results encompass the respondents' socio-demographic details, along with descriptive, normality, reliability, correlation, and regression analyses. In addition, all data outcomes are presented and thoroughly explained.

4.2 Demographic

This section offers an overview of the demographic characteristics of the 113 p-hailing riders who took part in the study. Table 4.1 shows the summary of their gender, age, education level, working arrangement, years of experience, daily working hours, number of deliveries per day, possession of a valid motorcycle license, and any history of road accidents.

The sample consisted of a majority of male respondents (98.2 percent, n = 111) with only a small fraction of females (1.8 percent, n = 2). Most participants fell into the 21 to 29 years age range with 77.9 percent (n = 88) and 22.1 percent (n = 25) between 31 and 39 years old. In terms of education, the majority had completed SPM (65.5 percent, n = 74), followed by those with STPM or a diploma (26.5 percent, n = 30), while only 8.0 percent (n = 9) held a degree and above. A majority of respondents worked full-time (66.4 percent, n = 75) compared to 33.6 percent (n = 38) who worked part-time. Regarding work experience, 6.2 percent (n = 7) had less than one year, 41.6 percent (n

= 47) had between one and two years, and 51.3 percent (n = 58) had three to four years of experience, with a mere 0.9 percent (n = 1) reporting more than five years. Daily working hours varied considerably, where 13.3 percent (n = 15) worked less than four hours, 23.9 percent (n = 27) worked four to six hours, 12.4 percent (n = 14) worked seven to nine hours, and a significant 50.4 percent (n = 57) worked more than nine hours per day. In terms of workload, 7.1 percent (n = 8) completed fewer than five deliveries per day, 13.3 percent (n = 15) handled five to ten deliveries, 8.0 percent (n = 9) managed eleven to fifteen deliveries, and a striking 71.7 percent (n = 81) delivered more than 15 orders daily. All respondents (100 percent, n = 113) possessed a valid motorcycle license, a mandatory requirement for p-hailing riders, and 58.4 percent (n = 66) reported previous involvement in road accidents, while 41.6 percent (n = 47) had not been involved in any accidents.

Table 4.1
Social Demographic Information (n=113)

Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	111	98.2
Female	2	1.8
Age		
21–29 years old	88	77.9
31–39 years old	25	22.1
Education Level		
SPM	74	65.5
STPM/Diploma	30	26.5
Degree and above	9	8.0
Working Mode		
Full-time	75	66.4
Part-time	38	33.6
Experience		
Less than a year	7	6.2
1–2 years	47	41.6
3–4 years	58	51.3
More than 5 years	1	0.9

Table 4.1 (Continued)

Characteristics	Frequency (n)	Percentage (%)
Average Daily Working Hours		
Less than 4 hours	15	13.3
4–6 hours	27	23.9
7–9 hours	14	12.4
More than 9 hours	57	50.4
Average Number of Deliveries per Day		
Less than 5	8	7.1
5–10	15	13.3
11–15	9	8.0
More than 15	81	71.7
Possession of a Valid Motorcycle License		
Yes	113	100.0
Previous Involvement in Road Accidents		
Yes	66	58.4
No	47	41.6

4.3 Descriptive Analysis

Within this section, descriptive statistics regarding the variables tested are presented. Means and standard deviations (SD) were used to examine each variable, all measured on a five-point Likert scale, where 1 represents “strongly disagree” and 5 represents “strongly agree”.

As shown in Table 4.2, the mean score for safety compliance is 4.00 (SD = 0.52), suggesting that respondents generally report moderately high adherence to safety measures. The mean score for safety knowledge is 4.38 (SD = 0.61), indicating that majority of respondents perceive themselves as well-informed about safety practices.

Meanwhile, safety motivation has a mean of 4.16 (SD = 0.66), reflecting a high level of motivation of respondents to follow safety regulations. Conversely, perceived work pressure records a moderately low mean of 2.68 (SD = 0.70), yet the relatively higher

standard deviation implies considerable variation among respondents' experiences of pressure.

Table 4.2
Descriptive Statistics (n = 113)

Variables	Mean	Standard Deviation
Safety Compliance	4.00	0.52
Safety Knowledge	4.38	0.61
Safety Motivation	4.16	0.66
Perceived Work Pressure	2.68	0.70

4.4 Normality Analysis

A Kolmogorov-Smirnov (K-S) test was conducted to assess the normality of the variables. The results, as presented in Table 4.3, indicate that all variables have statistically significant p-values ($p < 0.001$), suggesting that the data deviate from a normal distribution.

According to the normality assumption, a p-value greater than 0.05 indicates that the data are normally distributed, whereas a p-value less than 0.05 suggests non-normality (Sekaran & Bougie, 2016). Given that all variables in this study have p-values below 0.05, it can be concluded that the data are not normally distributed.

However, despite the significant results from the normality tests, the relatively large sample size ($N = 113$) permits the use of parametric tests, as recommended by the Central Limit Theorem. The theorem suggests that the sampling distribution of the mean will be approximately normal, even when the population distribution is not perfectly normal, particularly when the sample size is sufficiently large ($N > 30$). Therefore, while the data may not be perfectly normal, the use of parametric tests, such as Pearson correlation and multiple regression analyses, is justifiable.

Table 4.3
Tests of Normality (n=113)

Variable	Kolmogorov-Smirnov Statistic[a]	df	Sig.
Safety Compliance	0.119	113	<.001
Safety Knowledge	0.162	113	<.001
Safety Motivation	0.129	113	<.001
Perceived Work Pressure	0.121	113	<.001

a. Lilliefors Significance Correction

4.5 Reliability Analysis

A reliability analysis was conducted to assess the internal consistency of the measurement scales using Cronbach's alpha. According to Nunnally (1978), a Cronbach's alpha value of 0.70 or higher is generally considered acceptable, while values above 0.80 indicate good reliability.

As shown in Table 4.4, the Cronbach's alpha values for all variables in this study ranged from 0.725 to 0.866. Specifically, safety compliance (α = 0.725) and the overall scale (α = 0.728) demonstrated acceptable reliability. Safety knowledge (α = 0.866) showed excellent reliability, while safety motivation (α = 0.784) and perceived work pressure (α = 0.812) demonstrated good reliability. These results indicate that the items within each construct exhibit satisfactory internal consistency, supporting the reliability of the measurement scales used in this study.

Table 4.4
Reliability Statistics (n = 113)

Variables	N of Items	Cronbach's Alpha
Safety Compliance	7	0.725
Safety Knowledge	4	0.866
Safety Motivation	4	0.784
Perceived Work Pressure	7	0.812
Overall	**22**	**0.728**

4.6 Correlation Analysis

A Pearson correlation analysis was conducted to examine the relationships between dependent variable and the independent variables. The results, presented in Table 4.5, indicate the strength and direction of these relationships.

Safety knowledge was found to have a strong positive correlation with safety compliance, $r = 0.650$, $p < 0.001$, suggesting that higher safety knowledge is associated with higher safety compliance. Safety motivation showed a weak positive correlation with safety compliance, $r = 0.396$, $p < 0.001$, indicating a small but significant positive relationship. In contrast, perceived work pressure demonstrated a moderate negative correlation with safety compliance, $r = -0.446$, $p < 0.001$, meaning that as perceived work pressure increases, safety compliance tends to decrease.

These findings provide initial evidence supporting the study's hypotheses, indicating that safety knowledge and safety motivation positively influence safety compliance, whereas perceived work pressure negatively impacts it. The significant correlations suggest that these variables are relevant for further analysis in regression models.

Table 4.5
Correlation Between Variables (n = 113)

Variable	Safety Compliance	Safety Knowledge	Safety Motivation	Perceived Work Pressure
Safety Compliance	1	.650**	.396**	-.446**
Safety Knowledge	.650**	1	.617**	-.124
Safety Motivation	.396**	.617**	1	-.069
Perceived Work Pressure	-.446**	-.124	-.069	1

Note: **Correlation is significant at the 0.01 level (2-tailed), $p < 0.001$ for all correlations.

4.7 Regression Analysis

A multiple linear regression analysis was conducted to examine the effects of safety knowledge, safety motivation, and perceived work pressure on safety compliance. As shown in Table 4.6, the value of R represents the strength of the linear relationship between the predictors and the dependent variable. An R value of 0.747 indicates a moderate to strong positive correlation between the predictors and safety compliance. This suggests that the model explains a significant portion of the variability in safety compliance. The R^2 value of 0.558 means that approximately 55.8 percent of the variance in safety compliance can be explained by the predictors. This indicates that the model explains more than half of the variability in safety compliance, which is a good level of explanatory power. The standard error of the estimate (0.34808) reflects the average distance between the observed values and the values predicted by the model. A smaller standard error indicates that the model's predictions are closer to the actual values. In this case, the standard error is relatively small, suggesting that the model provides fairly accurate predictions.

Table 4.6
Model Summary (n = 113)

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.747	.558	.546	.34808

The ANOVA results (Table 4.7) indicate that the overall regression model was statistically significant, $F = 45.867$, $p < 0.001$. A higher F-value suggests that the regression model explains a significant portion of the variance in the dependent variable. The p-value for the F-test is less than 0.001, which is highly significant. This

suggests that at least one of the independent variables significantly predicts safety compliance.

Table 4.7
ANOVA Results (n = 113)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	16.671	3	5.557	45.867	<.001
Residual	13.206	109	.121		
Total	**29.878**	**112**			

The coefficients table (Table 4.8) presents the individual contributions of each predictor to safety compliance. The regression coefficients (B) and corresponding statistical tests (t and p-values) indicate the strength and direction of the relationships between the predictors and safety compliance.

The regression coefficient for safety knowledge is B = 0.513, with a Beta value of 0.606 ($t = 7.450$, $p < 0.001$), indicating that safety knowledge is a significant positive predictor of safety compliance. This suggests that for each one-unit increase in safety knowledge, safety compliance increases by 0.513 units. The Beta coefficient of 0.606 indicates a strong positive relationship between safety knowledge and safety compliance, meaning that as riders' safety knowledge improves, their adherence to safety protocols also increases. The t-statistic is highly significant ($p < 0.001$), confirming that safety knowledge plays a crucial role in promoting safety compliance.

The regression coefficient for safety motivation is B = -0.003, with a Beta value of -0.004 ($t = -0.045$, $p = 0.964$). This indicates that safety motivation does not have a statistically significant effect on safety compliance, as the p-value is much greater than 0.05. The Beta coefficient is extremely small, suggesting that changes in safety

motivation have a negligible effect on safety compliance in this model. This result implies that, although safety motivation may have a positive correlation with safety compliance (r = 0.396), it does not significantly predict compliance when other factors, such as safety knowledge and perceived work pressure, are considered. The very small value of Beta, along with the high p-value, shows that safety motivation is not a significant driver of safety compliance in this study.

The regression coefficient for perceived work pressure is B = -0.272, with a Beta value of -0.371 (t = -5.778, p < 0.001), indicating that perceived work pressure is a significant negative predictor of safety compliance. This means that for each one-unit increase in perceived work pressure, safety compliance decreases by 0.272 units. The Beta coefficient of -0.371 suggests a moderate negative relationship between perceived work pressure and safety compliance. As perceived work pressure increases, riders are more likely to engage in risky behaviors or neglect safety protocols. The t-statistic is highly significant (p < 0.001), confirming that perceived work pressure significantly impacts safety compliance.

Table 4.8
Regression Coefficients (n = 113)

Predictor	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	2.494	.295		8.454	<.001		
Safety Knowledge	.513	.069	.606	7.450	<.001	.613	1.633
Safety Motivation	-.003	.063	-.004	-0.045	.964	.619	1.615
Perceived Work Pressure	-.272	.047	-.371	-5.778	<.001	.984	1.016

To assess the presence of multicollinearity among the independent variables, collinearity statistics were examined using Tolerance and Variance Inflation Factor (VIF) values. According to Hair et al. (2010), a tolerance value below 0.10 or a VIF value above 10 indicates a potential multicollinearity problem.

As shown in Table 4.8, the tolerance values for all independent variables ranged from 0.613 to 0.984, while the corresponding VIF values ranged from 1.016 to 1.633. These results fall well within the acceptable range, suggesting no serious multicollinearity exists among the predictors. Therefore, it can be concluded that the independent variables contribute uniquely to the regression model and do not exhibit problematic levels of intercorrelation.

Based on the multiple regression results, the hypotheses status of this research can be summarised as in Table 4.9:

Table 4.9
Summary of Hypotheses Status

	Research Hypotheses	**Status**
H_1	Safety knowledge significantly influence safety compliance.	**Supported**
H_2	Safety motivation significantly influence safety compliance.	**Not Supported**
H_3	Perceived work pressure significantly influence safety compliance.	**Supported**

4.8 Summary of the Chapter

In summary, the chapter highlights the key findings from the data analysis, including significant correlations between safety knowledge, safety motivation and safety compliance, as well as the negative impact of perceived work pressure on compliance. Multiple regression analysis confirmed that safety knowledge and perceived work pressure were significant predictors of safety compliance, while safety motivation did not have a significant effect. The ANOVA results supported the overall significance of the regression model. The research's hypotheses is concluded with safety knowledge and perceived work pressure influencing safety compliance, while safety motivation did not.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

The findings revealed in Chapter 4 are discussed, emphasizing the main objectives of this research that aimed to investigate the impact of safety knowledge, safety motivation and perceived work pressure on safety compliance among p-hailing riders in Kedah. This chapter additionally includes a number of important sections to help interpret the findings, its implications and recommend practical efforts to improve safety compliance for p-hailing riders.

5.2 Discussion

The objectives of this study were to investigate the influences of safety knowledge, safety motivation, and perceived work pressure toward safety compliance among p-hailing riders in Kedah. Surveys were utilized as the method of data collection. From this process, 113 valid surveys were analyzed meticulously. A comprehensive understanding is obtained through the discussion of the findings on how these contribute toward safety compliance among p-hailing riders, including aspects of both positive and negative influences.

5.2.1 Influence of Safety Knowledge on Safety Compliance

The analysis showed a strong positive correlation between safety knowledge and safety compliance, where $r = 0.650$ ($p < 0.001$). The finding obtained from this analysis servers as a supporting detail to the hypothesis that higher safety knowledge is associated with higher safety compliance. The finding is consistent with previous studies (Mai et al., 2023; Taylor et al., 2023). The regression analysis further confirmed this relationship. The result obtained from regression analysis proves that safety knowledge emerging as a significant positive predictor of safety compliance ($\beta = 0.606$, $p < 0.001$). According to Bandura's Social Cognitive Theory (SCT), behavior is shaped by the dynamic interaction between cognitive factors, personal experiences, and the environment. Safety knowledge, as a cognitive component, equips individuals with the necessary understanding to recognize hazards and make informed decisions in potentially risky situations. When riders are well-informed about safety protocols and understand their importance, they are more likely to act in ways that align with safe behavior, demonstrating SCT's principle of reciprocal determinism.

This suggests that as p-hailing riders possess greater knowledge of safety practices, they are more likely to adhere to safety protocols, such as wearing helmets, following road regulations, and using safety equipment. The critical role of safety education and training programs in improving compliance among riders are highlighted through the findings of this study. The demographic characteristics of the sample, particularly the riders' educational background and work experience, may also influence their level of safety knowledge, aligning with SCT's emphasis on the role of personal and contextual

factors in behavioral outcomes. The higher percentage of respondents with a secondary school education (SPM) suggests that formal education may have a foundational impact on their understanding of safety concepts. With that being said, the ongoing training initiatives to enhance riders' understanding of safety measures should be priotized by organizations and merchant platforms. The effect could directly contribute to reducing accidents and promoting safer delivery practices.

5.2.2 Influence of Safety Motivation on Safety Compliance

Safety motivation was positively correlated with safety compliance, where $r = 0.396$ ($p < 0.001$), but it was not a significant predictor of safety compliance ($\beta = -0.004$, $p = 0.964$) in the regression analysis. While riders may be motivated to adhere to safety protocols, such motivation may not result in profound safety compliance outcomes. While prior researches (Nguyen Phuoc et al., 2024; Tedone et al., 2022) pointed to the role of motivation in adhering to safety measures, the finding of this study suggests that motivation alone was not enough to provide satisfactory compliance to safety measures. Other factors, such as organizational support, work conditions, and regulatory enforcement, may also play a more substantial role in shaping compliance.

From the lens of SCT, motivation is recognized as an important internal factor influencing behavior. However, SCT emphasizes that behavior results from the interplay of personal cognitive factors (like motivation and beliefs), behavior, and environmental influences, a process known as reciprocal determinism. In this context, while riders may be intrinsically or extrinsically motivated to act safely, environmental constraints, such as time pressure, high workload, or lack of organizational safety

support, can inhibit the translation of motivation into actual behavior. This aligns with SCT's assertion that even high motivation cannot lead to desired behavior if environmental facilitators or reinforcers are weak or negative.

The demographic analysis indicates that many riders work full-time (66.4 percent). This statistic suggests that it might be one of the factors that lead to increased pressure to meet delivery targets, which could potentially reducing the effectiveness of intrinsic safety motivation. Therefore, to effectively encourage safety compliance, it is essential not only to foster motivation but also to create a work environment that supports and reinforces safe behavior, consistent with SCT's emphasis on environmental determinants. Institutional interventions, such as consistent safety reminders, incentives for compliance, and manageable workloads, may strengthen the motivation-behavior link and enhance safety outcomes among riders..

5.2.3 Influence of Perceived Work Pressure on Safety Compliance

The relationship between perceived work pressure and safety compliance was statistically significant and had a negative correlation. Perceived work pressure negatively correlated with safety compliance ($r = -0.446$, $p < 0.001$). With increased pressure to deliver work the tendency is to cut corners leading to compromises in safety compliance. The regression analysis results validated perceived work pressure as a major negative predictor of safety compliance ($\beta = -0.371$, $p < 0.001$). This finding aligns with previous research (Wang et al., 2022; Segbedzi et al., 2023) that identified negative work pressure as having an adverse impact on safety compliance. The findings indicate that high delivery pressure may result in the p-hailing riders taking shortcuts,

ignoring safety rules or engaging in risky behaviors like speeding, traffic rules violations, and so on.

From the perspective of SCT, perceived work pressure influences safety compliance through its impact on self-regulation and reciprocal determinism. SCT emphasizes the dynamic interaction between personal factors, behavior, and the environment. When riders are exposed to high work pressure, their cognitive capacity to self-monitor and prioritize safe behavior is weakened. This pressure interferes with the formation of positive outcome expectations, which are crucial for maintaining compliance under challenging conditions. Riders may perceive that the rewards of faster delivery (e.g., more income or performance bonuses) outweigh the risks of violating safety procedures.

The demographic data contextualizes this finding, as neighbouring 71.7 percent of riders make more than 15 deliveries per day, which likely explains the high perceived work pressure. Additionally, the full-time workers, who make up the majority of the sample, are more likely to experience stress and time constraints, which could encourage risky behaviors as riders attempt to meet daily quotas. These results underscore the need for delivery platforms to address work pressure by adjusting delivery targets and offering sufficient time for safe practices. Reducing work pressure can help create a safer working environment, ultimately benefiting both the riders and the general public.

5.3 Contribution of the study

This study contributes to the expanding body of literature on safety compliance within the p-hailing industry, with a focus on riders in Kedah, Malaysia. It investigates the influence of safety knowledge, safety motivation, and perceived work pressure on safety compliance The findings present several practical, empirical, and theoretical contributions.

This study extends the application of Social Cognitive Theory (SCT) in the occupational safety context, particularly within the gig economy. By examining how safety knowledge, safety motivation, and perceived work pressure influence safety compliance, this research offers a nuanced understanding of how personal and environmental factors interact to shape rider behavior. The integration of these variables within the SCT framework contributes to theory-building in the area of safety behavior and provides a basis for future research to explore other cognitive and contextual determinants within similar informal work sectors.

Empirically, this study provides new data on safety compliance among p-hailing riders in Malaysia, a group that remains underrepresented in existing literature. The use of quantitative data from a local context contributes valuable insights that reflect the realities and challenges faced by food delivery riders in Kedah. Additionally, this study incorporates demographic variables such as age, education level, and work experience, revealing how these situational characteristics may influence safety behavior. These findings help address the gap in empirical research on the occupational risks and behavioral patterns of p-hailing workers.

From a practical perspective, the study offers guidance to platform companies, policymakers, and occupational safety practitioners. The results suggest that improving riders' safety knowledge and motivation while addressing the pressures created by economic incentives can enhance compliance with safety practices. By recognizing the impact of perceived work pressure, delivery platforms can implement rider-friendly policies such as reasonable delivery times, rest breaks, and safety training programs. These recommendations can help reduce work-related risks and contribute to safer working environments for gig workers. The demographic insights further allow stakeholders to design targeted interventions based on specific rider profiles.

Overall, this study enhances understanding of safety compliance in the under-researched p-hailing sector. It offers theoretical, empirical, and practical values that can inform future research and real-world interventions. By highlighting key influences on rider behavior, this research contributes to the ongoing effort to improve occupational safety in the gig economy.

5.4 Limitation of the study

While this study provides valuable insights into the factors influencing safety compliance among p-hailing riders in Kedah, several limitations should be considered when interpreting the results. Firstly, this study employed a cross-sectional design, which means the data were collected at a single point in time. This limits the ability to establish causal relationships between the variables.

Moreover, the data in this study were self-reported by the p-hailing riders, which may introduce response biases, including social desirability bias or recall bias. Riders may have overstated their adherence to safety measures or underreported instances where they failed to comply with safety protocols. While efforts were made to ensure anonymity and confidentiality, the reliance on self-reporting limits the accuracy of the data and may not fully reflect riders' actual behaviors on the road.

Lastly, while this study focused on safety knowledge, safety motivation, and perceived work pressure, other factors may also influence safety compliance that were not addressed in this research. Factors such as the influence of peers or the presence of safety enforcement measures by delivery platforms may play a role in shaping riders' behavior.

5.5 Recommendation for the Future Research

Based on the overall of the study, there are some considerations that can be explored in the future studies regarding safety compliance among p-hailing riders. Firstly given that a cross-sectional design was used in this study, hence, future research may consider a longitudinal study that is more useful in examining any causal relationships amongst safety knowledge, safety motivation, perceived work pressure, and safety compliance. A longitudinal study could also be helpful in capturing changes in rider's safety behavior over time and provide understanding of any long term impacts of the factors influencing safety compliance.

Secondly, this study relied on self-report data, future research may consider an approach which supplements self-reported measurements with objective data related to specific safety behaviors. An example may be useful to use the rider's traffic violations in lieu of self-reported measures, accident data, or on the job safety audits, which reflect safety behaviors. This would provide an enhanced reliability and contribute towards a comprehensive understanding of safety compliance in the p-hailing industry.

Last but not least, considering the outcome variables being safety knowledge, safety motivation, and perceived work pressure all significantly contributing towards safety compliance, future studies could consider alternative strategies for intervention. For example, future research could investigate the impact of safety training programs, incentive schemes, and policies aimed at job related perceived work pressure towards safety compliance. This will be applicable for delivery platforms and policy makers that may be seeking to design and implement safety strategies.

5.6 Conclusion

This study investigated the determinants of safety compliance among p-hailing riders in Kedah, focusing on safety knowledge, safety motivation, and perceived work pressure. The findings reveal that safety knowledge significantly predicts safety compliance, reinforcing the practical importance of consistent training and safety education for gig economy workers. Perceived work pressure negatively influenced safety compliance, suggesting that high job demands and time constraints can compromise adherence to safety protocols. Although safety motivation was positively correlated with compliance, it did not emerge as a significant predictor when considered

alongside the other variables, indicating that motivation alone may not sufficiently explain safety behavior in this context.

From a practical perspective, the study offers actionable insights for policymakers, platform providers, and occupational safety practitioners. Emphasizing safety training and reducing work-related pressure can lead to improved compliance and a reduction in road accidents, especially among high-risk groups like p-hailing riders. The findings can inform the development of targeted interventions and support systems to enhance rider safety and well-being within the dynamic gig economy.

Theoretically, this study contributes to the existing body of knowledge by applying and extending the Social Cognitive Theory in the context of occupational safety within the p-hailing industry. It demonstrates the relevance of individual cognitive and environmental factors in predicting safety behavior, thereby validating the framework in a non-traditional, decentralized work setting. Overall, the study bridges gaps in the literature and offers a foundation for future research on safety compliance in emerging forms of employment.

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Appendix A

Questionnaire Form

Title: The Influence of Safety Knowledge, Safety Motivation, Perceived Work Pressure Toward Safety Compliance Among Food Delivery Riders

Dear respondent,

I am a Master of Science (Occupational Safety and Health Management) student at the School of Business Management, College of Business, Universiti Utara Malaysia (UUM).

You are kindly invited to participate in this questionnaire. Your cooperation is greatly appreciated.
All responses will be kept confidential and used for educational purposes only.

Thank you.

SECTION (A): DEMOGRAPHIC INFORMATION

Please select one answer for each of the following questions:

1. **Gender:** Male / Female
2. **Age:** Less than 20 years / 21–29 years / 30–39 years / More than 40 years
3. **Education Level:** PMR/PT3 / SPM/SPMV / STPM/DIPLOMA/EQUIVALENT / DEGREE/MASTER/PhD
4. **Employment Type:** Full-time / Part-time
5. **Work Experience Duration:** Less than 1 year / 1–2 years / 3–4 years / More than 5 years
6. **Average Working Hours per Day:** Less than 4 hours / 4–6 hours / 7–9 hours / More than 9 hours
7. **Number of Deliveries per Day:** Less than 5 / 5–10 / 11–15 / More than 15
8. **Do you have a motorcycle license?** Yes / No
9. **Have you ever been involved in a road accident?** Yes / No

Please indicate your level of agreement with the following statements using the scale below:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

No	Item	1	2	3	4	5
SECTION (B): SAFETY COMPLIANCE						
1	I use hands-free kit, company-issued double barrel delivery bag, and helmet during delivery.					
2	I deliver food in a safe manner.					
3	I follow correct road safety rules and regulations while making delivery.					
4	I ensure the highest levels of safety when I make delivery.					
5	Occasionally due to lack of time, I deviate from correct road safety rules and regulations.					
6	Occasionally due to over familiarity with making delivery, I deviate from correct road safety rules and regulations.					
7	It is not always practical to follow all road safety rules and regulations while making delivery.					
SECTION (C): SAFETY KNOWLEDGE		**1**	**2**	**3**	**4**	**5**
1	I know how to use the motorcycle safety equipment (helmet, hands-free kit, boots, etc.) in a safe manner.					
2	I know how to maintain or improve health and safety while making delivery.					
3	I know how to reduce the risk of accidents and incidents while making delivery.					
4	I know what are the hazards associated with my jobs and the necessary precautions to be taken while making delivery.					

	SECTION (D): SAFETY MOTIVATION	1	2	3	4	5
1	I enjoy working safely while making delivery.					
2	Delivering order safely aligns with my personal values.					
3	I feel bad about myself when I do not deliver order safely.					
4	I feel guilty when I do not deliver order safely.					
	SECTION (E): PERCEIVED WORK PRESSURE	**1**	**2**	**3**	**4**	**5**
1	Timely delivery is given higher priority than safety.					
2	I am often in such a hurry to complete deliveries that safety is temporarily overlooked.					
3	I take short cuts when I need to get the order delivered in a timely manner.					
4	I often do not have time to deliver order safely.					
5	It is difficult to make delivery while following all of the road safety rules.					
6	taking are common due to high number of orders.					
7	There is a lot of pressure to complete deliveries quickly.					