THE INFLUENCE OF MANAGEMENT COMMITMENT, SAFETY TRAINING AND SAFETY COMMUNICATION ON SAFETY COMPLIANCE IN A MALAYSIA'S MANUFACTURING INDUSTRY

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Abstract

This study explores the organizational determinants that influence safety compliance within Malaysia's manufacturing sector, with a focus on three key variables: management commitment, safety training, and safety communication. Safety compliance defined as adherence to occupational safety and health (OSH) standards. It is essential in reducing workplace risks and safeguarding employee wellbeing. Despite Malaysia's established regulatory framework, including the Occupational Safety and Health Act (OSHA) 2022 Amendment and initiatives led by the Department of Occupational Safety and Health (DOSH), workplace accidents in the manufacturing industry remain persistently high. This raises critical questions about the effectiveness of current safety compliance practices.

What sets this study apart is its integrated approach, analyzing the combined effects of management support, training quality, and communication clarity factors typically examined in isolation in previous research. Additionally, this study is situated within the context of Malaysia's modular housing manufacturing sector, offering a rare and context-specific insight into safety behaviors in a high-risk, yet under-researched industrial niche. By drawing from Social Exchange Theory, the research further contributes theoretically by explaining how reciprocal relationships between employees and organizations foster compliance behaviors.

The study adopts a quantitative, cross-sectional design, collecting data via a structured online questionnaire. The survey uses a five-point Likert scale to assess perceptions of the selected variables. Statistical analyses, including correlation and multiple regression, are employed to examine the interrelationships among them.

The findings are expected to generate practical recommendations for OSH practitioners and industry leaders, especially in tailoring safety strategies that align with organizational behavior and cultural dynamics in Malaysia. By bridging empirical evidence with local industrial realities, this research not only addresses existing literature gaps but also invites readers to consider new perspectives on cultivating sustainable safety compliance in manufacturing environments.

Keywords: management commitment, manufacturing sector, safety communication, safety compliance, safety training.

Abstrak

Kajian ini meneroka penentu organisasi yang mempengaruhi pematuhan keselamatan dalam sektor pembuatan di Malaysia, dengan memberi tumpuan kepada tiga pembolehubah utama: komitmen pengurusan, latihan keselamatan, dan komunikasi keselamatan. Pematuhan keselamatan yang ditakrifkan sebagai pematuhan terhadap piawaian keselamatan dan kesihatan pekerjaan (OSH) adalah penting untuk mengurangkan risiko di tempat kerja dan melindungi kesejahteraan pekerja. Meskipun Malaysia mempunyai rangka kerja perundangan yang kukuh seperti Akta Keselamatan dan Kesihatan Pekerjaan (Pindaan) 2022 serta pelbagai inisiatif oleh Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP), insiden kemalangan di sektor pembuatan masih kekal tinggi. Situasi ini menimbulkan persoalan kritikal terhadap keberkesanan pelaksanaan pematuhan keselamatan semasa.

Keistimewaan kajian ini terletak pada pendekatan integratifnya, yang menganalisis kesan gabungan sokongan pengurusan, kualiti latihan, dan kejelasan komunikasi faktor yang lazimnya dikaji secara berasingan dalam kajian terdahulu. Tambahan pula, kajian ini dijalankan dalam konteks industri pembuatan rumah modular di Malaysia, sekali gus menawarkan pandangan khusus yang jarang diterokai mengenai tingkah laku pematuhan dalam sektor industri berisiko tinggi. Dengan menggunakan Teori Pertukaran Sosial (Social Exchange Theory), kajian ini turut menyumbang dari segi teori dengan menerangkan bagaimana hubungan timbal balik antara pekerja dan organisasi boleh mendorong pematuhan terhadap amalan keselamatan.

Kajian ini menggunakan reka bentuk kuantitatif dan rentas masa, dengan pengumpulan data melalui soal selidik dalam talian yang berstruktur melibatkan 350 pekerja sektor pembuatan. Soal selidik ini menggunakan skala Likert lima mata untuk menilai persepsi terhadap pembolehubah yang dikaji. Analisis statistik termasuk korelasi dan regresi berganda digunakan untuk meneliti hubungan antara pembolehubah tersebut.

Hasil kajian dijangka dapat memberikan cadangan praktikal kepada pengamal OSH, penggubal dasar, dan pemimpin industri, khususnya dalam merangka strategi keselamatan yang selari dengan tingkah laku organisasi dan dinamik budaya kerja di Malaysia. Dengan merapatkan jurang antara bukti empirikal dan realiti industri tempatan, kajian ini bukan sahaja menangani kekurangan dalam literatur terdahulu, malah menggalakkan pembaca untuk melihat pematuhan keselamatan dari perspektif yang lebih segar dan mampan.

Kata kunci: komunikasi keselamatan, komitmen pengurusan, latihan keselamatan, pematuhan keselamatan, sektor pembuatan.

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List of Abbreviations

DOSH	Department of Occupational Safety and Health
ILO	International Labour Organization
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Act
PPE	Personal Protective Equipment
SET	Social Exchange Theory
SPSS	Statistical Package for the Social Sciences
UUM	Universiti Utara Malaysia
SMEs	Small and Medium Enterprises

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Safety compliance reflects the extent to which employees consistently adhere to Occupational Safety and Health (OSH) legislation, industry standards and guidelines, organizational policies, and Standard Operating Procedures (SOPs) aimed at minimizing workplace hazards and ensuring a safe and healthy working environment (Ajmal, Isha, Nordin, Rasheed, Al-Mekhlafi, & Naji, 2022). This is particularly vital in high-risk sectors like manufacturing, construction, and oil & gas, where workers are often exposed to heavy machinery, hazardous substances, and dynamic work conditions (Ali, Yusof, & Adam, 2017).

Worldwide, the rate of occupational injuries remains troubling. The International Labour Organization (ILO) estimates that around 395 million workers sustain work-related injuries annually, while approximately 2.78 million fatalities occur due to occupational accidents or work-related illnesses (ILO, 2023). In the United States, the manufacturing industry alone reported 355,800 non-fatal injuries in 2023, largely stemming from failure to adhere to basic safety measures (U.S. Bureau of Labor Statistics, 2023).

The manufacturing industry in Malaysia serves as an essential driver for the nation's economic progress, significantly contributing to both its Gross Domestic Product (GDP) and national employment levels. However, it remains a high-risk industry due to the inherent dangers of operating heavy machinery, managing

hazardous materials, and executing complex production processes (Amirah, Asma, Muda, & Wan Mohd Amin, 2013). According to the Department of Occupational Safety and Health (DOSH), a total of 4,181 workplace accidents were reported in the manufacturing sector from January to October 2023, including 45 fatalities and 175 cases of permanent disability (DOSH, 2023). Although this marks a slight decrease from the 4,514 cases recorded in 2022, the consistently high number of incidents exceeding 4,000 annually from 2019 to 2023 , highlights persistent gaps in safety compliance and enforcement. This trend underscores the urgent need for strengthened preventive measures and the cultivation of a more proactive safety culture across the industry.

Table 1.1
Comparative Occupational Accident Statistics in the Manufacturing Sector, Malaysia (2019–2023)

Year	NPD	PD	Deaths	Total
2019	3,829	182	59	4,070
2020	4,202	231	73	4,506
2021	4,015	206	48	4,269
2022	4,273	183	58	4,514
2023	3,961	175	45	4,181

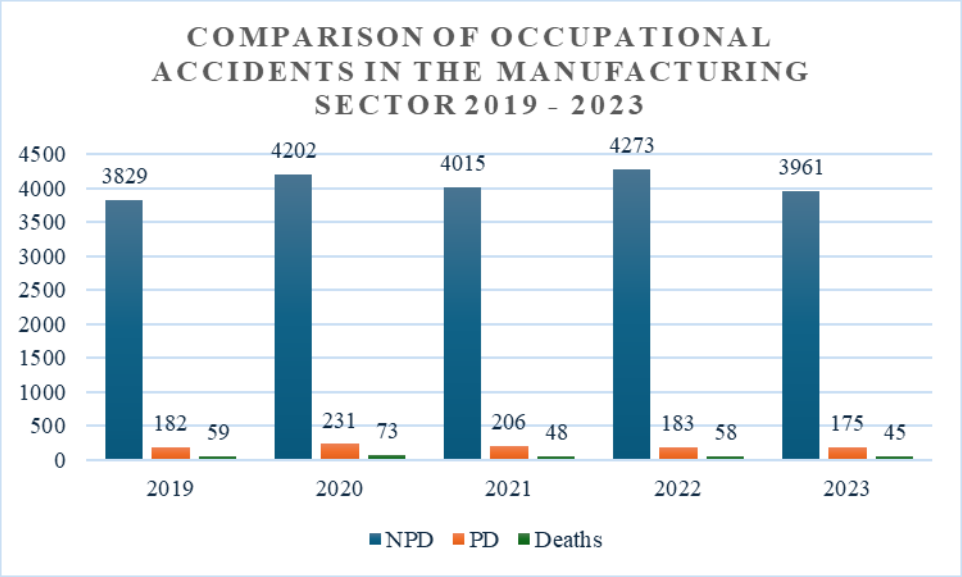

Figure 1.1 *Illustration of Trends in Occupational Accidents within Malaysia's Manufacturing Sector (2019–2023)*

Studies underline by Ajmal, Isha, Sabir, and Nordin (2021) and Hassan, Subramaniam, Zain, Ramalu, and Shamsudin (2020) have identified key organizational factors that influence safety compliance in the workplace, including ineffective communication, insufficient training, and limited management. These factors directly impact employees ability and willingness to adhere to safety standards. Given the context of government-linked companies, research by Isa, Wahab, Omar, Nordin, Taha, and Roslan (2021) reported that only 60% of them fully complied with OSH regulations, a figure considered moderate but still concerning, given that these companies often set industry benchmarks. The study attributes this shortfall to managerial indifference, inconsistent communication, and inadequate training programs, all of which weaken safety performance and employee well-being.

Managment commitment is instrumental in cultivating a safety-oriented culture. It includes active participation in safety-related planning, monitoring, and

allocation of resources. Ajmal et al. (2021) emphasized that engaged leadership significantly enhances employee safety compliance. Similarly, Abdullah, Mat Zin, Che Mat, and Wan Alias (2022) found that leadership involvement was a key factor in improving compliance among Bumiputera SMEs.

In addition to management commitment, safety training plays a critical role in ensuring compliance with safety protocols. According to Tappura, Jääskeläinen, and Pirhonen (2021), structured training programs empower employees with the skills to identify risks, adhere to safety standards, and respond to emergencies appropriately. Effective safety training ensures that employees understand their roles in maintaining a safe working environment. Research by Ajmal et al. (2021) supports the idea that comprehensive training directly improves safety compliance, emphasizing its role in shaping employee attitudes toward safety. Furthermore, Abdullah et al. (2022) highlighted that industry-relevant training formats enhance behavior change, ensuring that employees are better equipped to handle the safety challenges they face in their specific work environments.

Safety communication is also a vital element in enhancing safety compliance. It involves clear and consistent communication of safety policies, procedures, and expectations. Effective communication ensures that employees understand the risks and their responsibilities. According Saraih, Maniam, Norsyafawaty, and Valquis (2021), well-organized communication channels are directly linked to improved compliance. In Malaysia's multilingual workplaces, tools such as bilingual signs and safety ambassadors have proven effective in bridging communication gaps and ensuring that all employees receive safety information (Zulkifly, Yaakub, & Mohamad Zahir, 2024)

In summary, while Malaysia's OSH laws, such as Occupational Safety and Health (Amendment) Act 2022 provide a strong regulatory foundation, actual compliance varies. This research seeks to investigate how management commitment, safety training, and safety communication affect employee safety compliance within Malaysia's manufacturing industry.

1.2 Problem Statement

The Malaysian manufacturing sector remains one of the most hazardous industries, with frequent reports of accidents due to heavy machinery use, unsafe working conditions, and hazardous material handling (Hassan et al., 2020; Arif, 2015). Despite government efforts through the Occupational Safety and Health Act (OSHA) 2022 Amendment and enforcement by the Department of Occupational Safety and Health (DOSH), accident statistics in manufacturing consistently show high injury rates, including fatalities and permanent disabilities (Abdullah et al., 2022). These incidents not only cause human suffering but also disrupt productivity and impose significant costs on organizations, underscoring the urgent need to understand the organizational factors that shape workplace safety behavior.

While safety compliance refers to the adherence to safety standards, regulations, and practices designed to minimize workplace risks, the consistent occurrence of accidents indicates a practical gap in the enforcement of these measures. The problem lies not in the lack of safety laws but in the weak enforcement, limited management engagement, and inadequate training and communication. Studies have shown that factors such as insufficient management involvement, ineffective training, and poor communication contribute significantly to non-compliance and accident

recurrence (Ajmal et al. (2022). These issues are further exacerbated by the lack of a proactive safety culture, which is essential for ensuring safety compliance at all levels of the workforce (Hassan et al., 2020).

Management commitment is recognized as vital in cultivating a safety-oriented culture. Active participation from management in safety planning, monitoring, and resource allocation is key to integrating safety practices into organizational processes. However, research shows there is an empirical gap in understanding how management commitment interacts with other factors, such as safety training and communication, to influence safety compliance. While Ajmal et al. (2022) emphasized that engaged leadership significantly improves safety compliance, many studies, including Subramaniam, Shamsudin, Mohd. Zin, Ramalu, and Hassan (2016), have focused on management commitment in isolation, neglecting its interaction with other organizational factors. This study aims to explore how these elements work together to enhance safety compliance.

Similarly, safety training is crucial for ensuring that employees have the knowledge and skills to identify risks, follow safety protocols, and respond to emergencies. Despite the importance of training, many organizations still face challenges in delivering effective training programs. The knowledge gap in safety training lies in understanding how tailored and industry-specific training can improve compliance, especially in smaller organizations with limited resources. Research by Ajmal et al. (2022) and Abdullah et al. (2022) has shown that comprehensive and relevant training positively affects safety behaviors, but more studies are needed to understand the role of specific training formats in promoting long-term compliance.

This research aims to address this gap by exploring the impact of industry-specific safety training on safety compliance.

Finally, safety communication plays a critical role in ensuring employees are informed about safety protocols and the risks they may encounter. In Malaysia's multilingual and multicultural workplaces, poor communication can lead to misunderstandings and non-compliance. The communication gap lies in the failure to establish clear, effective, and culturally appropriate communication channels. Saraih et al. (2021) and Zulkifly et al. (2024) have highlighted how poor communication leads to safety non-compliance, but research has yet to fully explore how safety communication interacts with management commitment and safety training to affect compliance. This study seeks to fill this gap by examining the combined effect of safety communication, training, and management commitment on safety compliance in Malaysia's manufacturing sector.

In summary, while Malaysia's OSH laws provide a solid regulatory foundation, the inconsistent application of these laws points to a need for more research on how management commitment, safety training, and safety communication collectively influence safety compliance. This study will address both the theoretical and practical gaps in the literature by examining these factors together and providing context-specific insights for improving safety compliance in the manufacturing sector

1.3 Research Questions

i. Does management commitment positively influence safety compliance?

ii. Does safety training positively impact safety compliance?

iii. Does safety communication positively affect safety compliance?

1.4 Research Objectives

i. To examine whether management commitment positively influences safety compliance.

ii. To investigate whether safety training has a positive impact on safety compliance.

iii. To analyze whether safety communication positively affects safety compliance.

1.5 Significance of the Study

1.5.1 Practical Contribution

This study provides valuable, real-world insights for stakeholders including industry practitioners, factory manager and safety officers in the manufacturing field. The research findings can be used to develop practical safety policies by highlighting how leadership involvement, effective training programs, and clear communication systems contribute to improved compliance. By implementing the study's recommendations, organizations can potentially reduce accident rates, enhance employee wellbeing, and improve productivity by minimizing work disruptions caused by safety incidents.

1.5.2 Theoretical Contribution

From a theoretical viewpoint, this research adds to the current body of literature

by applying Social Exchange Theory (SET), initially introduced by Blau (1964), to the context of occupational safety. SET posits that employee behavior in organizations is shaped by reciprocal exchanges between workers and management. By examining how management commitment, safety training, and safety communication influence safety compliance, the study demonstrates how perceived organizational support such as leadership involvement, structured training, and open communication can cultivate a sense of reciprocal responsibility among workers, motivating them to engage in safe practices. This theoretical application enhances our understanding of the social and relational dynamics that underpin safety compliance in high-risk sectors, particularly within Malaysia's manufacturing industry. The study thus extends the relevance of SET by contextualizing it in a culturally and industrially specific environment.

1.5.3 Empirical Contribution

Empirically, the study responds to a recognized shortfall in prior research by exploring simultaneously management commitment, safety training, and safety communication as predictors of safety compliance an approach that differs from past studies which often examined these factors in isolation. Focusing specifically on a manufacturing organization in Malaysia, the study contributes localized data and insights that can be used to enhance compliance strategies within similar industrial contexts. The application of validated measurement tools and statistical analysis further strengthens its contribution to evidence-based safety research.

1.6 Scope of the Study

This research aims to explore how organizational factors influence safety compliance within the Malaysian manufacturing sector, with a focus on three key dimensions: management commitment, safety training, and safety communication. It investigates how these elements shape employee adherence to workplace safety procedures.

The study was conducted in a modular housing manufacturing company located in Penang, Malaysia. This industry was selected due to modular housing manufacturing involves complex, large-scale factory-based production processes that combine multiple high-risk elements, such as heavy machinery operation, precision engineering tasks, and material handling (Sarbini, Wee, & Thong, 2025). These conditions make it a representative and relevant case for examining safety compliance challenges in controlled manufacturing environments.

The scope of the study covers employees across various work departments. Data were collected using a quantitative design with a cross-sectional framework, capturing information at a single point in time to provide a snapshot of safety practices within the organization.

Although the research is limited to one organization, its findings are expected to offer valuable insights applicable to other high-risk manufacturing environments, particularly small and medium-sized enterprises (SMEs) that face similar safety compliance challenges.

1.7 Definition of Key Terms

1.7.1 Safety Compliance

Safety compliance is characterized by the degree to which personnel comply to the safety policies, procedures, and regulations instituted by an organization to mitigate risks and guarantee a safe working environment. This involves following safety measures, using personal protective equipment diligently, and reporting any potential hazards (Zulkifly et al., 2024). In the current research, safety compliance is defined as the dependent variable and is measured by the degree of adherence demonstrated by personnel to safety regulations within the Malaysian manufacturing industry.

1.7.2 Management Commitment

Management commitment is the extent to which an organization's leadership actively supports workplace safety through visible participation in safety programs, allocation of resources, and enforcement of safety policies (Ajmal et al. (2021). This research examines management commitment as an independent variable influencing safety compliance, recognizing that strong leadership involvement can significantly shape employee safety behavior.

1.7.3 Safety Training

Safety training consists of structured programs aimed at providing employees with the necessary knowledge and skills to identify workplace hazards, correctly use protective equipment, and respond effectively to emergencies (Kumarasamy, Saad, Rauf, Mohamed Mohan, and Ong (2018). In this study, safety training is treated as an

independent variable, emphasizing its role in enhancing employees' ability to comply with safety requirements.

1.7.4 Safety Communication

Safety communication involves the exchange of safety-related information within an organization to ensure that employees understand procedures, recognize hazards, and take appropriate preventive action (Isa, 2021). This study considers safety communication as an independent variable, acknowledging its importance in promoting safety compliance, particularly in Malaysia's multilingual and multicultural manufacturing workforce.

1.8 The Organisation of the Study

This study is structured into five chapters. Chapter One introduces the research by outlining its background, problem statement, objectives, research questions, and hypotheses, supported by the theoretical foundation of Social Exchange Theory (SET), and defining the scope and key terms. Chapter Two reviews relevant literature on safety compliance (dependent variable) and the three independent variables management commitment, safety training, and safety communication highlighting research gaps and presenting the conceptual framework. Chapter Three describes the research methodology, including the quantitative cross-sectional design, sampling, measurement instruments, data collection procedures, analysis techniques, and ethical considerations. Chapter Four presents the results, beginning with respondents' demographics and descriptive statistics, followed by reliability, correlation, and regression analyses to test the hypotheses. Chapter Five discusses the findings in

relation to SET, interprets their theoretical and practical implications, acknowledges limitations, and proposes directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews prior studies on the factors influencing safety compliance in Malaysia's modular house manufacturing industry, focusing on management commitment, safety training, and safety communication. It highlights the importance of safety compliance in high-risk environments and examines how management commitment drives adherence to safety practices, how safety training enhances workers' skills for safer behavior, and the role of safety communication in improving awareness and hazard reporting. The chapter uses Social Exchange Theory (SET) to explain how reciprocal relationships between employers and employees through leadership, training, and communication to promote proactive safety behaviors. Empirical evidence from both international and local studies is reviewed to identify gaps, challenges, and the current state of safety compliance practices, forming the basis for the research model and hypotheses.

2.2 Safety Compliance

Safety compliance, defined as employees' adherence to organizational safety rules, procedures, and regulatory requirements, has long been recognized as a core element of occupational safety performance. Early Malaysian studies emphasized that

compliance was primarily driven by the existence of formal safety rules and enforcement mechanisms under frameworks such as the Occupational Safety and Health (Amendment) Act 2022 (Amirah et al., 2013; (Ali et al.,2017). These works established that a strong safety culture, supported by management oversight, could significantly reduce workplace incidents.

Over time, the focus shifted from merely enforcing rules to understanding how organizational factors shape compliance behaviors. Subramaniam (2016) proposed that even in resource-constrained SMEs, robust safety management practices such as regular inspections, hazard reporting systems, and clear communication substantially improved compliance. Hassan et al. (2019) further demonstrated that safety communication plays a critical role in reinforcing safety standards and procedures, directly influencing employees' willingness to comply.

More recent research integrates these earlier perspectives into multidimensional models of safety behavior. Saraih et al. (2021) found that in high-risk manufacturing environments involving heavy machinery and hazardous materials, compliance is strengthened by aligning management commitment, training, and communication strategies. Ajmal et al. (2022) advanced this by showing that safety compliance mediates the relationship between safety management practices and improved safety outcomes, suggesting that compliance acts as a key mechanism translating organizational initiatives into reduced accidents.

The latest evidence by Zulkifly et al. (2024) confirms that in Malaysian SME manufacturing, both safety compliance and safety participation are essential for achieving high safety performance, with compliance serving as the immediate

preventive behavior against workplace incidents. This progression in research, from enforcement-focused studies to integrated, behavior-based approaches, emphasizes that safety compliance should be understood as a dynamic outcome shaped by management commitment, safety training, and safety communication. It highlights that rather than being seen as a static obligation, safety compliance is influenced by leadership, communication, and training practices within the workplace, all of which are central to this study's focus on the manufacturing industry in Malaysia.

2.3 Management Commitment

Management commitment has long been recognized as a crucial element in building a strong workplace safety culture. Early research in Malaysia's industrial context, such as Ali, Abdullah, and Subramaniam (2009), demonstrated that management commitment, alongside other management practices, could significantly reduce workplace injuries by fostering a proactive safety culture. Their study highlighted that passive enforcement was insufficient to ensure safety compliance; proactive leadership engagement was necessary to maintain compliance and foster a safety-oriented culture.

Building on these earlier insights, Subramaniam et al. (2016) extended the role of management commitment in Malaysian SMEs, where they found that management commitment was one of the strongest predictors of safety compliance. Despite the challenges faced by SMEs, such as limited resources and reliance on informal systems, the study demonstrated that active management commitment could still foster safer behaviors. Similarly, Farouk (2017) further differentiated between passive and active forms of management commitment, showing that direct involvement in safety

committees and initiatives had a stronger impact on the perceived effectiveness of occupational safety and health (OSH) programs within manufacturing companies.

In more recent studies, Ajmal et al. (2021) examined the oil and gas sector in Malaysia and found that management commitment, when paired with safety training, significantly enhanced safety compliance, which in turn contributed to a reduction in occupational accidents. Abdul Hamid, Mohd Nor, and Yahya (2020) similarly demonstrated that leadership alone was insufficient; management support structures that actively reinforced OSH policies were essential for improving safety outcomes. These findings reinforced the importance of leadership engagement but also highlighted the need for organizational support to ensure the sustainability of safety practices.

The most recent evidence by Isa et al. (2021) confirmed that, in Malaysian Government-Linked Companies (GLCs), management commitment, alongside safety rules, communication, and training, had a strong positive correlation with employee compliance and a better safety culture. However, despite this consistent evidence, accident rates in certain Malaysian manufacturing sectors remain high. This suggests that management commitment, while significant, is not always fully embedded in daily operations and may remain reactive or audit-driven, rather than proactive and integrated into continuous improvement efforts. This gap directly aligns with the focus of this study, which examines management commitment as a predictor of safety compliance in the manufacturing sector.

2.3.1 The Relationship Between Management Commitment and Safety Compliance

The Workplace safety literature has long recognized the significant relationship between management commitment and employee safety compliance, particularly in high-risk sectors such as manufacturing. Early studies positioned management's role primarily as a provider of policies, resources, and oversight to ensure adherence to safety protocols.

Globally, management commitment has been consistently identified as a predictor of compliance, with actions such as allocating resources, conducting safety audits, and visibly modeling safe practices shown to shape employee perceptions and behaviors. In Malaysia's automotive manufacturing context, Arif (2015) found that management commitment combined with worker involvement and safety training had the strongest correlation with both compliance and participation behaviors, suggesting that leadership engagement directly influences employees' safety-related attitudes and actions.

Building on this, Subramaniam et al. (2016) highlighted in Malaysian SMEs that management commitment, safety training, and safety rules were the most influential safety management practices. The study further revealed that safety participation mediated the relationship between management commitment and compliance, reinforcing the idea that leadership's role extends beyond policy enforcement to fostering an environment where employees are actively involved in safety initiatives.

Later, Farouk (2017) empirically demonstrated that both passive and active management commitment significantly influenced the perceived effectiveness of Occupational Safety and Health Committees (OSHCs) in manufacturing firms. Active forms of commitment such as leadership participation in safety programs and decision-making had a stronger effect than passive measures like policy documentation, aligning with global findings that symbolic gestures alone are insufficient to sustain compliance.

More recent studies expand on these earlier insights by integrating management commitment into multidimensional models of safety performance. Abdul Hamid et al. (2020) emphasized that OSH leadership must be reinforced by tangible management support, such as employee engagement initiatives and robust safety systems, to achieve measurable improvements in compliance. Similarly, Ajmal et al. (2022) found that visible and proactive management commitment significantly improves compliance by shaping employees' perceptions of organizational priorities.

Despite these advances, Ajmal et al. (2022) also noted that inconsistent enforcement and limited resources continue to hinder the realization of leadership-driven safety outcomes, particularly in SMEs. Addressing these gaps requires leadership strategies that embed safety as a core organizational value, supported by open communication, learning platforms, and employee empowerment. In Malaysia's manufacturing sector, where operational risks are high, such approaches are critical for translating management commitment into sustained compliance, thereby aligning with this study's objective to examine the influence of management commitment on safety compliance.

2.4 Safety Training

Safety training has long been recognized as a cornerstone of Occupational Safety and Health (OSH) management, equipping workers with the knowledge, skills, and attitudes necessary to identify hazards, follow safety protocols, and effectively respond in emergencies. In high-risk sectors like manufacturing, construction, and oil and gas, safety training is not merely a regulatory requirement but a strategic tool for reducing workplace accidents and enhancing operational efficiency.

The early works in safety training emphasized the importance of structured programs, especially in Malaysia's construction sector. The CIDB Green Card Programme, introduced in 1997 by Bakri, Mohamad Zin, Misnan, Yusof, and Mahmood (2006), was a pivotal step. This program, often referred to as a "safety passport," required construction workers to complete the Safety Induction Course for Construction Workers (SICW). This initiative emphasized the need for tailored training content and effective delivery methods to improve safety knowledge among workers. However, the limitations identified by Goh, Abdullah@Mohd Asmoni, Misnan, Jaafar, and Lee (2014) highlighted that although the program improved safety awareness, factors such as language barriers and insufficient instructional methods reduced its overall effectiveness. These studies reinforced the idea that training must be contextually relevant to be truly effective.

In the years following, research extended to the manufacturing sector, where studies began to demonstrate that safety training could lead to measurable improvements in safety outcomes. Bahari (2011) conducted a longitudinal study that showed that safety training, supported by management's commitment to safety, could

significantly improve safety performance. This was further corroborated by (Wahab, Shaari, Rajab, Panatik, & Saat, 2014), who found in Malaysia's automotive sector that safety training was a significant driver of safety performance, with a strong correlation ($r^2 = 0.631$, $p < 0.001$) between training and reduced accident rates. Subramaniam et al. (2016) also supported this, noting that safety training in Malaysian Small and Medium Enterprises (SMEs), coupled with management commitment, played a crucial role in ensuring safety compliance, with safety participation acting as a mediator in this relationship.

Further studies in more recent years continued to build upon this foundation. Kumarasamy et al. (2018) demonstrated that continuous, personalized safety training led to significant improvements in personal compliance with safety rules, particularly when training was tailored to the specific needs of workers. Ajmal et al. (2021) further validated this in the context of Malaysia's oil and gas industry, showing that safety training not only reduced accident rates but also reinforced safety compliance as a key factor mediating the relationship between management commitment and reduced occupational hazards. Murugiah, Kuppusamy, and Rao (2024) emphasized that continuous, organization-specific training is vital in sustaining risk awareness and mitigating hazards, especially in resource-constrained SMEs.

Despite the substantial progress, some gaps remain. Studies by Ajmal et al. (2021) and Amnah (2017) suggest that while safety training improves compliance in controlled settings, the lack of follow-up reinforcement and failure to adapt the training to specific work conditions can undermine its long-term effectiveness. Zulkifly et al. (2024) further pointed out that high safety performance in SMEs is difficult to sustain

without continuous refresher courses and strong communication channels to support the ongoing training.

In conclusion, the literature illustrates a clear evolution from general compliance-based safety training to more sophisticated, competency-based, and context-specific training programs that are continuously reinforced. These advancements highlight the need to embed safety training within a broader safety culture framework, particularly in Malaysia's manufacturing sector. Ensuring that training is both updated and contextually relevant will help in maintaining knowledge retention, hazard awareness, and adherence to safety procedures over time. This approach is in line with the present study's hypothesis, which posits that safety training has a positive impact on safety compliance, integrating both historical foundations and recent improvements in OSH practices..

2.4.1 The Relationship Between Safety Training and Safety Compliance

Safety training has long been recognized as a cornerstone of occupational safety and health (OSH) management, equipping workers with the knowledge, skills, and attitudes necessary to identify hazards, follow safety protocols, and respond effectively in emergencies. In high-risk sectors such as manufacturing, construction, and oil and gas, training is not merely a compliance requirement but a strategic mechanism for reducing workplace accidents and improving operational efficiency (Ajmal et al., 2021; Kumarasamy et al., 2018).

Early Malaysian research in the construction sector emphasized the need for structured, standardized training for hazard awareness. Bakri et al. (2006) documented

the Construction Industry Development Board's (CIDB) Green Card Programme, introduced in 1997 as a mandatory "safety passport" requiring completion of the Safety Induction Course for Construction Workers (SICW). Goh et al. (2015) evaluated this programme and confirmed that tailored content and context-appropriate delivery significantly improved safety knowledge, though language barriers and instructional limitations constrained its overall effectiveness. These foundational studies highlighted the principle that training must be adapted to workers' backgrounds and workplace contexts to achieve sustained compliance.

Subsequent research shifted attention toward manufacturing and SME contexts, where resource limitations pose unique challenges. Kumarasamy et al. (2018) demonstrated that personalized, continuous safety training significantly increased compliance with safety rules, even in non-industrial settings such as higher education institutions, suggesting transferability to industrial environments. Ajmal et al. (2021), focusing on Malaysia's oil and gas industry, found that safety training not only directly improved compliance but also acted as a mediating factor between management commitment and accident reduction, underscoring its strategic role in OSH performance.

The most recent evidence reinforces the importance of continuous, context-specific training for sustaining safety behaviors. Murugiah et al. (2024) reported that in Malaysian SMEs, regular and organization-specific safety training was among the most critical determinants of OSH compliance, helping workers maintain hazard awareness and adhere to procedures despite limited resources.

Overall, the literature demonstrates a progression from standardized, compliance-focused training programmes toward competency-based, context-sensitive, and continuously reinforced approaches. For Malaysia's manufacturing sector, this suggests that safety training should be embedded within a broader safety culture framework, ensuring that hazard awareness, procedural adherence, and knowledge retention are consistently reinforced over time. This aligns with the current study's hypothesis that safety training positively influences safety compliance, integrating both foundational practices and contemporary strategies tailored to the Malaysian industrial context..

2.5 Safety Communication

Safety communication is a crucial component of Occupational Safety and Health (OSH) management, designed to ensure that employees understand, adhere to, and implement safety protocols effectively. Historically, safety communication was seen as a top-down, directive process aimed primarily at ensuring compliance with safety protocols.

Initially, safety communication in Malaysia's SMEs was largely one-way, with safety rules being transmitted from employers to employees, often with little interaction or feedback. Early research by Amnah (2017) explored safety compliance within Malaysian SMEs, revealing that safety communication was primarily focused on transmitting safety procedures. Amnah (2017) highlighted the importance of clear safety rules in promoting compliance but also pointed out that simply relaying information was insufficient without incorporating training or fostering an environment that encouraged active engagement with safety practices. This indicates that while

information dissemination was important, a more interactive and engaging approach was needed to improve compliance and participation.

As research evolved, attention shifted towards enhancing safety communication by encouraging more involvement from employees. Yeong (2018) study examined safety communication in Malaysian manufacturing SMEs and found that safety communication was often formal and lacked sufficient employee engagement, which led to low participation in safety activities. While safety rules were communicated, Yeong (2018) emphasized the need to foster a more inclusive safety culture where employees actively participated in safety discussions. This gap pointed to the need for safety communication strategies that not only deliver information but also involve employees in the safety process, promoting a more collaborative approach.

Yeong (2018) further contributed to this shift by emphasizing the role of safety leadership in enhancing the effectiveness of safety communication. Yeong (2018) demonstrated that safety leadership mediated the relationship between safety communication and employee participation, showing that leaders could motivate employees to engage with safety practices. This finding was in line with Social Exchange Theory (SET), which suggests that employees are more likely to reciprocate positive organizational actions like clear communication and supportive leadership with increased safety compliance and participation.

Building upon these insights, Fiah, Salleh, Ramli, and Zakaria (2022) focused on the construction industry in Malaysia, illustrating the importance of considering the diverse workforce, especially in multilingual environments. Their research showed that effective safety communication must include both verbal communication and visual

aids, such as posters, to cater to the different needs of employees. This study further refined the understanding that safety communication needs to be not only inclusive but also accessible to employees from diverse backgrounds, a significant improvement over earlier studies that focused mostly on language barriers.

More recently, Zulkifly et al. (2024) emphasized the importance of continuous, structured safety communication strategies. Their research showed that regular safety messages and interactive feedback channels significantly enhanced safety culture and compliance in Malaysian SMEs. This study reinforced the previous research by focusing on the ongoing dialogue needed to foster a strong safety culture, highlighting the critical role of continuous communication in sustaining safety practices.

In conclusion, safety communication in Malaysian SMEs has evolved from a one-way, compliance-driven process to a more interactive and participatory approach. The progression from past to present demonstrates a shift towards more inclusive communication strategies that actively involve employees and incorporate leadership to enhance safety outcomes. This development aligns with Social Exchange Theory (SET), which suggests that continuous and positive organizational actions, such as proactive safety communication, foster greater employee engagement and compliance with safety practices.

2.5.1 The Relationship Between Safety Communication and Safety Compliance

Effective safety communication is a critical factor in promoting safety compliance within organizational settings. It entails the timely, accurate, and clear exchange of information related to safety policies, hazards, and preventive measures, ensuring

employees understand and adhere to safety protocols. Historically, safety communication was largely seen as a top-down, directive process, with employers delivering safety rules and guidelines to employees with limited room for interaction or feedback.

In earlier studies, such as Amnah (2017), the focus was primarily on safety communication as a means of transmitting safety instructions. Amnah's study revealed that while safety communication played a significant role in ensuring compliance, it was not sufficient by itself. The study highlighted that for safety communication to be effective, it had to be complemented with training and a conducive work environment that encourages employee engagement. This early research underscores the foundational role of safety communication in compliance but also identifies the need for additional factors to strengthen safety behaviors.

Building on this foundation, Hassan et al. (2019) conducted a study within Malaysian SMEs and identified a significant positive correlation between effective safety communication and adherence to safety protocols. Their findings suggested that communication about safety procedures was more effective when reinforced by consistent rule enforcement and active worker participation. This study shows a clear improvement over earlier findings, stressing that safety communication should not only focus on the transmission of information but should also create an environment where employees are actively involved in safety practices.

A further refinement of safety communication research came from Fiah et al. (2022), who examined the construction industry in Malaysia. Their study concluded that effective safety communication is foundational to building a strong safety culture.

They found that communication strategies incorporating verbal and visual aids, as well as multilingual messages, played a crucial role in improving safety compliance, particularly in high-risk sectors such as construction. This research highlights the growing recognition that safety communication must be inclusive, accessible, and adaptable to diverse workforces.

In line with these insights, Zulkifly et al. (2024) advanced the understanding of safety communication by emphasizing the importance of continuous, open communication channels. Their study in Northern Malaysian SMEs found that when employees were encouraged to express safety concerns and provide feedback, they were more likely to engage in safe practices and comply with safety regulations. This shift towards a more interactive communication model represents an improvement over previous top-down methods, aligning with the principles of Social Exchange Theory (SET), which suggests that employees reciprocate organizational support (e.g., through open communication) with increased compliance and engagement.

In conclusion, the relationship between safety communication and safety compliance has evolved significantly. Early studies focused on the one-way dissemination of safety information, whereas more recent research emphasizes interactive, two-way communication that fosters employee participation and feedback. By creating open channels for communication, organizations can not only ensure that safety protocols are well understood but also encourage active engagement and compliance. The inclusion of Social Exchange Theory (SET) further strengthens this argument by suggesting that mutual trust and support between employees and employers can enhance safety behaviors, leading to improved safety compliance and a stronger safety culture..

2.6 Underpinning Theories

The underpinning theories for this study are essential to understanding how safety compliance behaviors develop and are sustained in organizational settings, particularly in the manufacturing sector. These theoretical frameworks establish the foundation for the examination of the interrelations among the independent variables of management commitment, safety training, and safety communication, as well as the dependent variable of safety compliance.

2.6.1 Social Exchange Theory

This study is grounded in Social Exchange Theory (SET), initially proposed by Blau (1964), which provides a framework for understanding the reciprocal relationships between employees and their organizations. SET suggests that social behavior is driven by the exchange of rewards and costs. In an organizational context, when employees perceive positive treatment, such as management support, training, and communication, they are more likely to reciprocate through positive behaviors, such as adhering to safety protocols. This creates a dynamic where both the organization and employees benefit from mutual exchanges, fostering a productive work environment and ensuring safety compliance.

Historically, SET was introduced by Blau (1964) who focused on the concept of reciprocal exchanges in social relationships. They argued that individuals engage in relationships based on mutual benefit, where positive organizational actions, such as rewarding employees with support, recognition, or training, encourage employees to reciprocate with desirable behaviors. Early research suggested that these organizational

investments lead to enhanced compliance and organizational commitment from employees, as they are motivated to return the support they receive.

Over time, the theory was expanded to include Perceived Organizational Support (POS), introduced by Eisenberger, Huntington, Hutchison, & Sowa (1986). POS posits that when employees perceive their organization as caring for their well-being, they are more likely to reciprocate with behaviors like safety compliance. In this regard, management's visible commitment to safety, through actions such as clear communication and training, plays a critical role in fostering a supportive environment where employees feel valued. In addition, Cropanzano & Mitchell (2005) emphasized the importance of Leader-Member Exchange (LMX), suggesting that when the relationship between employees and managers is built on trust and respect, employees are more likely to engage in behaviors that support the organization's goals, such as safety compliance.

More recent studies, such as those by Fiah et al. (2022) and Zulkifly et al. (2024), show that open communication, management commitment, and training programs increase employees' POS, which in turn leads to increased safety compliance. These studies align with SET, reinforcing the idea that when employees feel supported and valued by their organization, they are more likely to comply with safety regulations.

SET is particularly suitable for this study as it explains how organizational practices, such as management commitment, safety training, and safety communication, lead to safety compliance through reciprocal exchanges. When employees feel supported by their organization, they are more likely to reciprocate with increased compliance and engagement in safety behaviors. The SET framework offers

a clear explanation of the relational dynamics that motivate employees to follow safety protocols, not just as a requirement but as a form of reciprocal behavior.

In conclusion, SET provides a strong theoretical basis for understanding safety compliance as a motivational and relational outcome shaped by the quality of exchanges between employees and their organization. This study uses SET to explore how organizational support, training, and communication foster a mutual exchange, ultimately leading to higher safety compliance in the workplace

2.7 Summary of the Chapter

This chapter reviewed the key literature and theoretical foundations related to safety compliance in the manufacturing industry. It focused on three key organizational factors management commitment, safety training, and safety communication and how they influence employee safety compliance, which is crucial for reducing accidents in high-risk environments like manufacturing.

Research from both global and Malaysian studies consistently shows that management commitment is essential in shaping employee safety behavior. When leaders demonstrate a strong commitment to safety, employees are more likely to follow safety rules. Similarly, safety training is vital for equipping employees with the knowledge and skills to recognize hazards and respond to emergencies. Training is most effective when it is practical, role-specific, and accessible to all workers, taking into account their literacy levels.

Safety communication was also highlighted as a key factor in promoting compliance. Clear and timely communication ensures that employees understand safety

expectations and encourages them to report unsafe conditions and participate in safety improvements.

This discussion is framed by Social Exchange Theory (SET), introduced by Blau (1964), which explains how employees reciprocate organizational support such as training, leadership involvement, and effective communication through compliant safety behavior. SET emphasizes trust, fairness, and mutual obligation as drivers of positive workplace behavior, making it an ideal framework for understanding safety dynamics in the manufacturing context.

Overall, this chapter provides a solid conceptual foundation for the study, justifying the choice of variables and guiding the development of the research framework.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology utilized to explore the factors influencing safety compliance among employees in Malaysia's manufacturing industry. The study focuses on assessing the impact of management commitment, safety training, and safety communication on employees' adherence to safety procedures and standards. The methodology is designed to address the research objectives in a structured and reliable manner.

A quantitative research approach was adopted to facilitate the objective measurement of variable relationships. This method is well-suited for statistical analysis and supports the generalization of results to similar industrial contexts. A cross-sectional survey design was implemented to collect data at a single point in time, offering a current overview of workplace safety practices and employee perceptions within the manufacturing sector.

The methodology section details several components: the research design, which explains the rationale for selecting a quantitative framework; the study population and sampling method, which justifies the selection of participants and outlines how a representative sample was obtained; the data collection process, which involves the distribution of structured questionnaires using a Likert scale; and the data analysis methods, which encompass descriptive statistics, correlation analysis, and multiple regression to test the proposed relationships.

This chapter also discusses the theoretical foundation guiding the study, namely Social Exchange Theory (Blau, 1964), to explain the reciprocal relationship between organizational practices and employee behavior. Additionally, ethical procedures followed during the research including participant consent, confidentiality, and voluntary participation are clearly stated to ensure the integrity of the study process.

By detailing what is being studied, why each method was chosen, and *how* the research will be executed, this chapter provides a clear and rigorous roadmap for assessing the organizational factors that shape safety compliance behavior in manufacturing environments.

3.2 Research Framework

The research framework for this study illustrates the theoretical relationships between the independent variables (management commitment, safety training, and safety communication) and the dependent variable (safety compliance). It serves as the foundation for analyzing how these organizational factors influence employee safety compliance in Malaysia's manufacturing sector. This framework is adapted from Social Exchange Theory (SET), as proposed by Blau (1964), which supports the relationships by emphasizing the reciprocal nature of organizational support and employee behavior.

By drawing on SET, the framework highlights how organizational practices such as management commitment, safety training, and safety communication motivate employees to reciprocate through compliant safety behavior, creating a positive

exchange that benefits both employees and the organization.

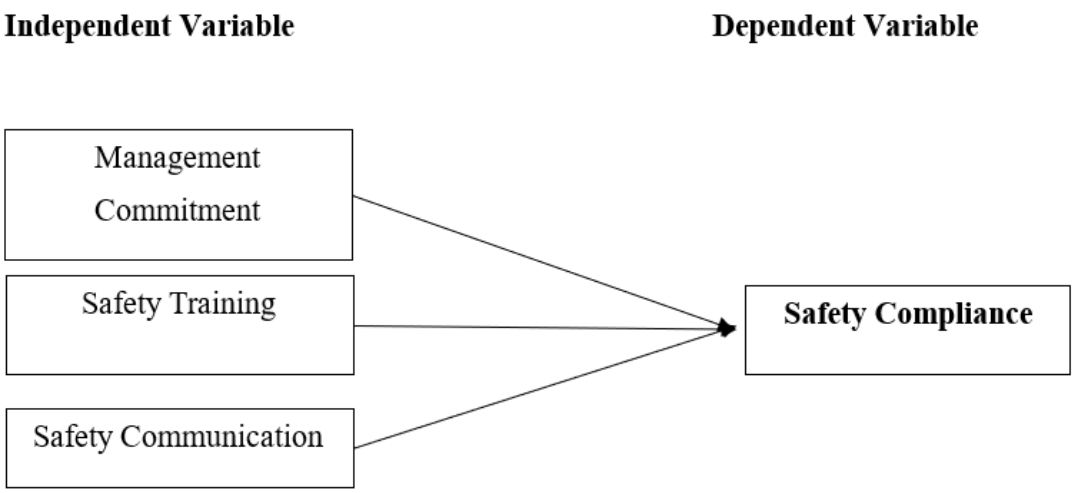

Figure 3.1 *Research Framework*

3.3 Hypotheses Development

This section outlines the hypotheses formulated to explore the relationships between the independent variables (IVs), specifically management commitment, safety training, and safety communication, and the dependent variable (DV), which pertains to safety compliance. The hypotheses are constructed upon insights derived from the literature and the theoretical frameworks presented in Chapter 2.

H1: There is a significant positive relationship between management commitment and safety compliance.

Management commitment is widely recognized as a crucial factor in ensuring adherence to safety protocols, especially in high-risk industries such as manufacturing. Effective management commitment not only prioritizes safety in organizational policies but also actively integrates it into daily operations. This commitment is often demonstrated through proactive actions, such as providing safety resources, leading

safety meetings, reinforcing safe behaviors, and engaging employees in safety discussions.

Early research consistently highlighted the importance of management commitment in promoting safety compliance. For instance, Subramaniam et al. (2016) identified management commitment as one of the strongest predictors of safety compliance among six safety management dimensions evaluated in small and medium-sized enterprises (SMEs). Their study suggested that when employees perceive that management genuinely prioritizes safety over operational output, they are more likely to follow established safety procedures. Similarly, Farouk (2017) reported that both active and passive forms of management commitment were positively associated with the effectiveness of safety committees in manufacturing companies, reinforcing the idea that visible leadership support enhances safety compliance.

More recent studies have further supported these findings. Ye et al. (2020) demonstrated that employees' perceptions of management's commitment were significantly correlated with their adherence to safety protocols. Their study also identified psychological factors such as hope, resilience, and self-efficacy as mediators of this relationship, suggesting that management commitment not only influences safety compliance but also boosts employee engagement and positive attitudes toward safety behaviors.

Following this, Ajmal et al. (2021), in the context of Malaysia, demonstrated that management commitment serves as a critical mediator in improving safety compliance and reducing occupational accidents, particularly in high-risk sectors like

oil and gas. This study underscores the role of management commitment in fostering a culture of safety.

Additionally, Inyang, Nwaogazie, and Ugbebor (2024) emphasized the significant role of management commitment in SMEs within the Nigerian manufacturing industry, where they found that the dedication of senior management to safety was a strong predictor of safety compliance.

The literature, from early studies to recent findings, consistently supports the notion that management commitment plays a pivotal role in enhancing safety compliance. By creating a culture where safety is prioritized, actively engaging employees, and visibly supporting safety practices, management significantly influences the extent to which employees adhere to safety protocols. This relationship is essential for building trust, fostering employee engagement, and ensuring sustained safety compliance in manufacturing environments.

H2: There is a significant positive relationship between safety training and safety compliance.

Safety training is a fundamental aspect of ensuring that employees have the necessary skills and knowledge to perform their tasks safely. This is particularly crucial in high-risk industries like manufacturing, where employees are frequently exposed to operational hazards. Safety training helps employees understand potential risks and equips them with the tools needed to mitigate those risks, making it a critical component of safety compliance.

Early research, such as Kumarasamy et al. (2018), supported the link between

safety training and safety compliance. Their study, conducted within Malaysian higher education institutions, found that tailored and continuous safety training had a statistically significant influence on employees' adherence to safety protocols. This highlighted the long-standing importance of training in ensuring safety compliance across various sectors.

Further studies within the Malaysian context, such as Ajmal et al. (2021), explored the oil and gas industry and found that safety training was a key factor in improving employee compliance, which contributed to reducing occupational accident rates. This study emphasized that safety training not only raised awareness but also helped build a safety culture within organizations, reinforcing the positive impact of training on safety compliance.

In more recent studies, Obong, Amadi, Ekpenyong, Harry, and Edodi (2021) identified that health and safety training significantly improved safety-related behaviors and compliance within manufacturing organizations. Their findings provided robust evidence that structured safety training directly correlates with better safety compliance and behavior in the workplace. Similarly, Tappura et al. (2021) reported that safety training led to significant improvements in safety knowledge, attitudes, and compliance behaviors in industrial settings. This reinforces the idea that safety training is vital for ensuring employees follow safety protocols and mitigate workplace risks.

The evidence from both past and recent studies consistently emphasizes the importance of safety training in promoting safety compliance. By providing employees with the essential knowledge, skills, and motivation, safety training contributes significantly to building a safer work environment. These findings support the long-

standing and ongoing need for effective safety training to ensure adherence to safety procedures and reduce workplace hazards.

H3: There is a significant positive relationship between safety communication and safety compliance.

Safety communication is a crucial factor in enhancing employee safety behavior, particularly in high-risk environments such as manufacturing. It involves the timely, accurate, and interactive exchange of safety-related information, ranging from hazard alerts and standard operating procedures to open dialogues between supervisors and employees. Effective safety communication ensures that safety expectations are clearly understood and consistently followed, which directly contributes to improved compliance with organizational safety protocols.

In earlier studies, Lümker (2012) identified that the quality of media and horizontal safety information were significant predictors of safety compliance. Their research emphasized the importance of high-quality, accessible, and peer-driven communication systems to support lasting safety behaviors, which highlights the importance of communication quality in achieving sustained safety compliance.

Amnah (2017), in the context of Malaysian SMEs, demonstrated that safety communication, along with safety training and a positive work environment, explained over 60% of the variance in safety compliance among workers. This study highlighted the essential role of clear and frequent communication in fostering a compliant workforce.

More recent studies further reinforce the importance of safety communication in promoting compliance. Hassan et al. (2019) found a significant positive correlation between safety communication and adherence to safety protocols among employees in Malaysian manufacturing SMEs. The study emphasized that consistent communication about safety procedures and the use of interactive feedback channels significantly improved compliance rates and safety awareness among employees.

Following this, Haas and Yorio (2021) highlighted the importance of both formal (supervisor-led) and informal (coworker) safety communication in promoting safety compliance, particularly in interdependent industrial settings. Their study showed that coworker communication plays a significant role in enhancing behavioral safety compliance, underlining the value of peer-to-peer dialogue in reinforcing safety practices.

Similarly, Graham, B. A., Pool, R., Rosopa, P. J., Roma, P. G., & Russell, D. W. (2024) emphasized that safety communication strongly predicts individual compliance within organizations, particularly when reinforced by supervisor emphasis and peer behavior. Their multilevel study within the U.S. Navy demonstrated that well-structured communication systems enhance individual accountability and foster group safety norms, suggesting that communication influences both individual and collective safety compliance.

The evidence from both past and recent studies consistently supports the significant role of safety communication in improving safety compliance. Clear, consistent, and interactive communication not only ensures that employees understand

safety protocols but also encourages active participation in safety practices, fostering a safer work environment..

3.4 Research Design

This study uses a quantitative research framework with a cross-sectional design to examine the relationships between management commitment, safety training, safety communication, and safety compliance in the manufacturing industry. Data will be collected through a self-administered online questionnaire using a five-point Likert scale to assess perceptions of these variables and safety compliance behaviors. A pilot test will ensure the reliability of the instrument. Data analysis will involve descriptive statistics and regression analysis to evaluate the relationships between the variables. This approach is well-suited for capturing current perceptions of safety compliance, as demonstrated by studies like Ajmal et al. (2022) and Haas & Yorio (2021), which used similar designs to assess safety-related behaviors in industrial settings (Ajmal et al., 2022; Haas & Yorio, 2021).

3.5 Operational Definition

To promote uniformity and precision in the assessment of the variables within this study, the subsequent operational definitions are delineated for each principal construct. These definitions articulate the particular dimensions of the variables that will be evaluated within the framework of this research.

3.5.1 Safety Compliance

Safety compliance is translated into measurable terms through 7 questionnaire items that assess employees' self-reported adherence to safety procedures, such as the implementation of personal protective equipment (PPE) and adherence to standard operating procedures (SOPs). The measurement scale is adapted from Vinodkumar and Bhasi (2010). Responses are recorded on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 3.1
Operational Definition and Items for Safety Compliance

Variable	Operational Definition	Original Item (from Vinodkumar and Bhasi (2010)	Translation Item
Safety Compliance	Refers to employees' observable behavior in adhering to mandatory safety rules and procedures set by the organization. This includes consistently wearing personal protective equipment (PPE), following standard operating procedures (SOPs), and complying with safety-related instructions during work operations. Defined based on Vinodkumar and Bhasi (2010).	SC:1 I use all necessary safety equipment to do my job at the workplace.	SC1: I use all necessary safety equipments to do my job at workplace.
		SC2: I carry out my work in a safe manner.	SC2: I carry out my work in a safe manner
		SC3: I follow correct safety rules and procedures while carrying out my job at the workplace.	SC3: I follow correct safety rules and procedures while carrying out my job at workplace.
		SC4: I ensure the highest levels of safety when I carry out my job.	SC4: I ensure the highest levels of safety when I carry out my job.

SC5: Occasionally due to lack of time, I deviate from correct and safe work procedures.	SC5: Occasionally due to lack of time, I deviate from correct and safe work procedures
SC6: Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.	SC6: Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.
SC7: At times, it may not be practical to follow all safety rules and procedures when performing my job.	SC7: At times, it may not be practical to follow all safety rules and procedures when performing my job.

3.5.2 Management Commitment

Management commitment is operationalized through 9 questionnaire items that assess employees' perceptions of top management's involvement in and prioritization of workplace safety. This includes actions such as allocating sufficient resources, enforcing safety policies, and emphasizing safety over productivity. The measurement scale is adapted from Vinodkumar and Bhasi (2010), and responses are recorded on a 5-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Table 3.2
Operational Definition and Items for Management Commitment

Variable	Operational Definition	Original Item (from Vinodkumar and Bhasi (2010)	Translation Item
Management Commitment	Refers to the perceived level of management's dedication and responsibility toward workplace safety. This includes actions such as enforcing safety policies, allocating resources for safety, promoting a strong safety culture, and regularly communicating the importance of safety to all levels of staff. Based on Vinodkumar and Bhasi (2010).	MC1: Safety is given high priority by the management in our workplace.	MC1: Safety is given high priority by the management in our workplace.
		MC2: Safety rules and procedures are strictly enforced and followed by management in the workplace..	MC2: Safety rules and procedures are strictly enforced and followed by management in the workplace.
		MC3: Corrective action is always taken when the management is told about unsafe practices.	MC3: Corrective action is always taken when the management is told about unsafe practices.
		MC4: In my workplace, managers/engineers/supervisors do not show interest in the safety of workers.	MC4: In my workplace, managers/engineers/supervisors do not show interest in the safety of workers.
		MC5: Management considers safety to be equally important as production.	MC5: Management considers safety to be equally important as production
		MC6: Members of the management do not attend safety meetings.	MC6: Members of the management do not attend safety meetings.
		MC7: I feel that management is willing to compromise on safety for	MC7: I feel that management is willing to

	increasing production output.	compromise on safety for increasing production output.
	MC8: When near-miss accidents are reported, my management acts quickly to solve the problems.	MC8: When near-miss accidents are reported, my management acts quickly to solve the problems.
	MC9: My company provides sufficient personal protective equipment for the workers.	MC9: My company provides sufficient personal protective equipment for the workers.

3.5.3 Safety Training

Safety training is measured through 6 questionnaire items that evaluate the frequency, relevance, and effectiveness of training programs received by employees. These items assess how well the training prepares employees to recognize hazards, follow safety procedures, and perform tasks safely. The measurement scale is adapted from Vinodkumar and Bhasi (2010), and responses are recorded on a 5-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Table 3.3
Operational Definition and Items for Safety Training

Variable	Operational Definition	Original Item (from Vinodkumar and Bhasi (2010)	Translation Item
Safety Training	Defined as the structured and formal instruction provided to	ST1: My company gives comprehensive training to the employees in workplace health and safety issues.	ST1: My company gives comprehensive training to the employees in workplace health and

	employees to enhance their awareness, knowledge, and skills regarding workplace safety. This involves orientation programs, hands-on training, and briefings aimed at helping workers recognize hazards and perform tasks safely. Based on Vinodkumar and Bhasi (2010).		safety issues.
		ST2: Newly recruited employees receive sufficient training to understand and follow safety rules and procedures.	ST2: All newly recruited employees receive sufficient training to understand and follow safety rules and procedures.
		ST3: Safety issues are given high priority in training programmes	ST3: Safety issues are given high priority in training programmes
		ST4: I am not adequately trained to respond to emergency situations in my workplace.	ST4: I am not adequately trained to respond to emergency situations in my workplace.
		ST5: Management actively encourages employees to participate in safety training programs.	ST5: Management actively encourages employees to participate in safety training programs.
		ST6: The safety training provided to me is sufficient to help me identify and assess hazards in my workplace.	ST6: The safety training provided to me is sufficient to help me identify and assess hazards in my workplace.

3.5.4 Safety Communication

Safety communication is measured using 5 questionnaire items that assess the clarity, openness, and frequency of safety-related information exchanged between management and employees. This includes communication about hazard reporting, safety

procedures, and feedback mechanisms. The measurement scale is adapted from Vinodkumar and Bhasi (2010), and responses are recorded on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 3.4
Operational Definition and Items for Safety Communication

Variable	Operational Definition	Original Item (from Vinodkumar and Bhasi (2010)	Translation Item
Safety Communication	Refers to the process and quality of safety-related information exchange between management, supervisors, and employees. It includes the openness of communication, encouragement to report unsafe conditions, dissemination of safety procedures, and clarity in communicating safety expectations. Defined following Vinodkumar and Bhasi (2010).	SC1: My company does not have a hazard reporting system that allows employees to communicate potential hazards before incidents occur in the workplace.	SC1: My company does not have a hazard reporting system that allows employees to communicate potential hazards before incidents occur in the workplace.
		SC2: Management operates an open door policy on safety issues.	SC2: Management operates an open door policy on safety issues
		SC3: There is sufficient opportunity to discuss and deal with safety issues in meetings.	SC3: There is sufficient opportunity to discuss and deal with safety issues in meetings.
		SC4: The targets and goals for safety performance in my organization are not clearly communicated to the employees.	SC4: The targets and goals for safety performance in my organization are not clearly communicated to the employee
		SC5: There is open communication about	SC5: There is open communication

	safety issues in this workplace.	about safety issues in this workplace.

3.6 Measurement of Instrumentation

A structured questionnaire was utilized in this study to assess four key constructs: safety compliance (as the dependent variable), along with management commitment, safety training, and safety communication (as independent variables). The measurement items were adapted from the scale developed by Vinodkumar and Bhasi (2010), a widely recognized instrument in safety behavior research within industrial environments. This tool has shown strong construct validity and has been effectively applied in studies conducted in high-risk occupational settings.

All items were measured using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The use of this format is supported by extensive research in organizational and social science contexts. Koo and Yang (2025) highlight that the 5-point Likert scale is ideal for converting subjective perceptions into quantifiable data while minimizing respondent fatigue and cognitive burden (Koo & Yang, 2025). Additionally, Kulkarni, Joshi, and Bedekar (2016) emphasize the Likert scale's reliability and statistical significance in workplace behavioral studies, supporting its continued use in both pre- and post-survey designs.

Higher average scores on each scale reflect stronger agreement, greater compliance, or higher perceived safety management quality. Scores were computed by averaging responses across the items representing each construct.

The internal consistency of the original instrument has been validated in previous studies by Vinodkumar and Bhasi (2010), with Cronbach's alpha values ranging from 0.70 to 0.86. These values confirm acceptable to high reliability across the four variables.

Table 3.5
Measurement Constructs, Sample Items, and Reliability Coefficients

Variable	No. of Items	Cronbach's α	Sample Items (Adapted from Vinodkumar & Bhasi, 2010)
Safety Compliance	7	0.76	- I use all necessary safety equipments to do my job. - I carry out my work in a safe manner.
Management Commitment	9	0.86	- Safety is given high priority by the management. - Corrective action is always taken when the management is told about unsafe practices
Safety Training	6	0.82	- Newly recruits are trained adequately to learn safety rules and procedures. - Safety issues are given high priority in training programmes.
Safety Communication	5	0.70	- Management operates an open door policy on safety issues - There is open communications about safety issues in this workplace

3.7 Population and Sampling

The target population for this study consists of employees working within the modular house manufacturing industry in Penang, Malaysia, spanning various departments. The sample includes individuals from Production (76.3%), Quality Assurance (16.3%), Maintenance (1.7%), Engineering (2.6%), Warehouse (0.6%), and Office Staff (2.6%). These departments represent different functions within the manufacturing process, providing a well-rounded understanding of how organizational practices influence safety compliance across multiple roles. Additionally, employees are grouped by work shifts, with the majority working the day shift (58%), followed by those in the noon shift (36.6%), and a smaller proportion in the normal shift (5.4%). This demographic diversity ensures that the study captures a wide range of perspectives on safety compliance from various departments and shifts within the industry

Table 3.6
Employment Information

Demographic	Sub-profile	Frequency	Percentage
Department	Production	267	76.3
	Maintenance	6	1.7
	Quality assurance	57	16.3
	Engineering	9	2.6
	Warehouse	2	0.6
	Office staff	9	2.6
Work shift	Day shift	203	58.0
	Noon shift	128	36.6
	Normal shift	19	5.4

3.7.1 Sampling Frame

The sampling framework for this research was based on a comprehensive personnel roster obtained from a modular house manufacturing operating in Malaysia. To ensure that every employee had an equal and unbiased chance of being selected, a simple random sampling technique was employed using the random number generation function in Microsoft Excel. Each employee was assigned a unique identifier, and a random draw was conducted to achieve the target sample size of 350 respondents.

Simple random sampling is widely acknowledged for its effectiveness in minimizing selection bias and enhancing the representativeness of the sample, particularly when the target population is relatively homogeneous in structure (Acharya, Prakash, Saxena, & Nigam, 2013).

This method allows the study to generalize its findings more accurately to the broader employee population within the organization.

3.7.2 Sample Size

Establishing an adequate sample size is an essential aspect of quantitative research, as it guarantees the statistical validity and broader applicability of the study's results. In this research, the essential sample size was determined utilizing the Raosoft sample size calculator, a widely accepted tool for survey-based research. Based on a 95% confidence level, a 5% margin of error, and an assumed response distribution of 50%, the recommended sample size was 341 respondents.

To accommodate potential non-responses or incomplete questionnaires, the researcher distributed a total of 350 questionnaires. This methodology is in accordance with established standards in survey research, which recommend the practice of oversampling to reduce the likelihood of data loss and to improve the dependability and credibility of the results (Craig & Egerton-Warburton, 2013). Consequently, the chosen sample size surpasses the requisite minimum and is deemed adequate for deriving statistically significant conclusions regarding the determinants of safety compliance at a manufacturing industry.

This research adopted a simple random sampling approach to confirm that every employee within the organization was given an equal opportunity for selection. This approach bolsters the objectivity of the sample while minimizing sampling bias, thus facilitating the generalizability of the research findings to the wider workforce (Singh, 2003).

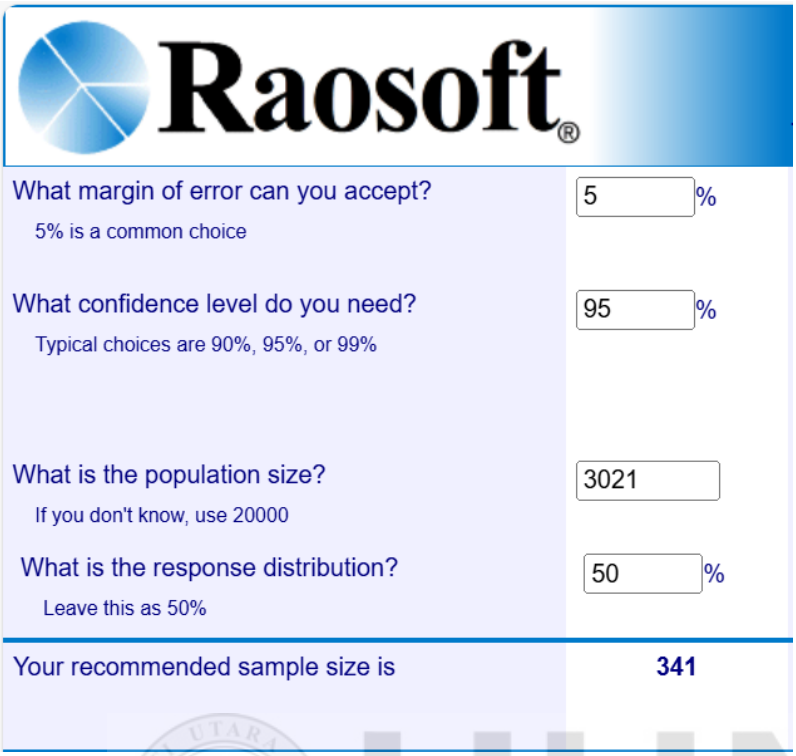

Figure 3.2 *Raosoft Sampling Calculator*

3.7.3 Sampling Procedure

This research employed a probability sampling methodology, specifically using simple random sampling (SRS). This technique was chosen due to its capability to guarantee that each member of the target population possesses an equal and independent probability of selection, thereby aiding in the reduction of selection bias and enhancing the overall representativeness of the sample (Singh, 2003).

To comply with the principles of SRS, a complete list of eligible employees was obtained from the Human Resources department. Each individual was assigned a unique identification number. Then, the required number of participants was selected using a random number generator in Microsoft Excel, ensuring the randomization

process was unbiased and systematic. This method aligns with standard SRS practices, as it does not rely on judgment or stratification and treats every employee equally.

Unlike stratified or cluster sampling methods, SRS assumes the population is homogeneous for the variables under study, and is especially effective when there is no need to categorize individuals by department, job function, or other characteristics. This unbiased approach enhances the generalizability of the study's findings to the larger employee population, which is critical for accurately assessing safety compliance behaviors across diverse demographic groups.

3.8 Data Collection Procedures

This study employed a structured data collection process to ensure that the information gathered was reliable, consistent, and valid:

i. **Questionnaire Development**

The questionnaire was carefully designed to reflect the study's research objectives and accurately measure the constructs of management commitment, safety training, safety communication, and safety compliance. All items were adapted from the validated measurement instrument proposed by Vinodkumar and Bhasi (2010), which has been extensively applied in safety behavior research within industrial contexts. Each construct was represented by multiple items designed to translate theoretical concepts into measurable indicators suitable for statistical analysis.

ii. **Pilot Testing**

A pilot study involving 30 employees from the target organization was carried

out to assess the clarity, interpretability, and internal consistency of the questionnaire items. The primary objective of this preliminary testing phase was to identify any potentially confusing wording, evaluate how well participants understood each item, and verify whether the items accurately represented their intended constructs. This step also aimed to establish the reliability of the instrument prior to its application in the main study.

The choice of sample size was informed by psychometric guidelines, which suggest that a minimum of 30 participants is sufficient for evaluating questionnaire reliability through Cronbach's alpha during initial testing (Bujang, Omar, and Baharum (2018). This number offers an appropriate balance between statistical adequacy and practical feasibility, while also accounting for potential non-response.

Insights gathered from participant feedback led to minor revisions to improve item wording and overall readability. The pilot results showed that all constructs achieved Cronbach's alpha values above the commonly accepted threshold of 0.70, confirming the reliability of the instrument for use in the full-scale research.

iii. **Online Distribution**

The finalized questionnaire was distributed via email to employees across different departments and work shifts. This method ensures accessibility and efficiency in reaching a broad range of participants. Previous studies, such as Michaelidou and Dibb (2006), have highlighted the effectiveness of email distribution in online research, noting that it facilitates wider outreach and

higher participation when combined with clear instructions and anonymity assurances. During the data collection period, response rates were monitored, and reminder emails were sent to underrepresented departments to encourage balanced participation and improve the dataset's representativeness.

3.9 Techniques of Data Analysis

The gathered data were analyzed using SPSS, a comprehensive statistical software suite frequently utilized in the realms of organizational and social sciences research, praised for its adaptability and user-friendly interface for diverse statistical approaches (Alili & Krstev, 2019). The following analytical techniques were applied to ensure accurate and meaningful results:

i. **Descriptive Statistics**:

Descriptive statistics, including the mean and standard deviation, were employed to summarize central tendencies and variations in participant responses for each construct. Frequency distributions were also utilized to detail demographic characteristics and general response trends, offering a thorough overview of the sample. These measures serve as foundational tools to condense data into clear summaries and inform further inferential analysis (Barrios Becerra, Vázquez Reyes, García Hernández, Velasco Elizondo, & González, 2021).

ii. **Reliability Testing**:

To assess the internal consistency of the measurement instruments, Cronbach's Alpha was calculated for each construct: management commitment, safety

training, safety communication, and safety compliance. A Cronbach's Alpha value of 0.70 or above is considered acceptable, indicating satisfactory internal consistency. The interpretation of these values follows the standard benchmarks provided by Tavakol and Dennick (2011).

Table 3.7
Interpretation of Cronbach's Alpha Values

Cronbach's Alpha Range	Interpretation
≥ 0.90	Excellent
0.80 – 0.89	Good
0.70 – 0.79	Acceptable
0.60 – 0.69	Questionable
< 0.60	Poor

Note. Adapted from Tavakol, M., & Dennick, R. (2011). *Making sense of Cronbach's alpha*. *International Journal of Medical Education*, *2*, 53–55.

iii. **Inferential Statistics**:

Pearson correlation analysis was applied to assess the strength and direction of relationships between the independent variables management commitment, safety training, and safety communication and the dependent variable, safety compliance. This statistical technique is widely recognized for identifying meaningful associations in behavioral research (Hui, 2018). Additionally, multiple regression analysis was conducted to evaluate how well the independent variables predicted safety compliance. This approach quantified the extent to which variations in safety compliance could be explained by the predictors while accounting for their simultaneous effects (Guerrero, 2018).

3.10 Summary of the Chapter

This chapter described the research methodology employed to investigate the effects of management commitment, safety training, and safety communication on safety compliance within manufacturing industry in Malaysia. A quantitative, cross-sectional research design was utilized, with participants selected through simple random sampling from a total workforce of 3,000 employees. The minimum sample size of 341 was determined using statistical power analysis. Data collection was carried out through a self-administered online questionnaire, which was adapted from previously validated instruments and structured using a 5-point Likert scale. A pilot study was conducted beforehand to ensure the clarity and reliability of the survey items. The collected data were subjected to both descriptive and inferential statistical analyses, including correlation and regression, to examine relationships and test the study's hypotheses.

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CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the research findings following the analysis of the respondents' demographic profiles, followed by a detailed interpretation of the study's results. The investigation successfully addressed three core research objectives: first, to determine the extent to which management commitment positively affects safety compliance; second, to examine the role of safety training in promoting safety compliance; and third, to assess the contribution of effective safety communication to safety compliance. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 23 to fulfill these objectives. The results are systematically displayed in tables, and the chapter concludes with a summary of the study's key implications.

4.2 Demography of Respondents

This section elucidates the demographic data pertaining to the respondents. The demographic data is organized into two distinct categories: personal details (encompassing age, gender, marital status, and nationality) and occupational information (including department and work shift). The demographic data is systematically presented in tabular form, reflecting both numerical and percentage representations of the respondents. Consequently, the compilation of demographic information is articulated in Table 4.1.

4.2.1 Personal Information

The assessment of age group distribution disclosed that 41.7% of the sample (n = 146) were under 25 years of age, 47.7% of the sample (n = 167) were within the 25 to 34 year age interval, 9.7% of the sample (n = 34) were aged from 35 to 44 years, and 0.9% of the sample (n = 3) were within the 45 to 54 year age bracket.

In terms of the respondents' demographic profile based on gender, it was observed that 343 respondents were male, accounting for 98.0%, while the remaining 7 respondents were female, representing 2.0%.

Regarding the respondents' marital status, the findings indicated that 195 respondents identified as single, comprising 55.7%, 153 respondents were married, constituting 43.7%, and the remaining 2 respondents were divorced, representing 0.6%.

According to the table 4.1, most of the nationality of respondents are 54.0% (n = 189) are Malaysia, followed by 42.0% (n = 147) are Bangladesh, and lastly, 4.0% (n = 14) are Myanmar.

Table 4.1
Personal Information

Demographic	Sub-profile	Frequency	Percentage
Age	Below 25 years	146	41.7
	25 - 34 years	167	47.7
	35 - 44 years	34	9.7
	45 - 54 years	3	.9
Gender	Male	343	98.0
	Female	7	2.0

Marital status	Single	195	55.7
	Married	153	43.7
	Divorced	2	0.6
Nationality	Malaysia	189	54.0
	Bangladesh	147	42.0
	Myanmar	14	4.0

4.3 Realibility Analysis

According to the reliability assessment, the Cronbach Alpha coefficients for safety compliance, managerial commitments, safety training, and safety communication within Malaysia's manufacturing sector are delineated in Table 4.2.

Table 4.2
Realibility analysis

Variables	**Cronbach's Alpha**	**N of items**
Safety compliance	0.827	7
Management commitment	0.701	9
Safety training	0.822	6
Safety communication	0.708	5

The Cronbach's alpha coefficient for the dependent variable, safety compliance, was calculated at 0.827. For the independent variables, the Cronbach's alpha values were 0.701 for management commitment, 0.822 for safety training, and 0.708 for safety communication. These results, as shown in the corresponding reliability table, indicate that the majority of the variables exceed the commonly accepted reliability threshold of 0.7. This suggests that the measurement items exhibit strong internal consistency and are reliable for subsequent analysis.

4.4 Normality Analysis

4.4.1 Skewness and Kurtosis

The outcomes derived from the normalization of the dataset, as assessed through the statistical tests of Skewness and Kurtosis, are presented in Table 4.3.

Table 4.3
Normality analysis

Variables	Skewness	Kurtosis
Safety compliance	.083	-1.354
Management commitment	.028	-.760
Safety training	-.266	-.587
Safety communication	.225	-.694

As shown in Table 4.3, the statistical analysis confirms that the variables examined in this study follow a normal distribution, with mean values falling within ±2 standard deviations, consistent with the threshold recommended by Hair et al. (1998). The skewness values range between -0.266 and -0.225, while the kurtosis values fall between -1.354 and -0.587. These results suggest acceptable levels of skewness and kurtosis, indicating that the data meet the assumption of normality for all key variables, including safety compliance, management commitment, safety training, and safety communication. Therefore, the dataset is considered suitable for further statistical procedures.

4.4.2 Histogram

The histogram graphs illustrated in Figures 4.1 to 4.4 indicate that the study sample adheres to a normal distribution, as evidenced by the bell-shaped curve present in all displayed histograms. Consequently, the assumption of normality is satisfied.

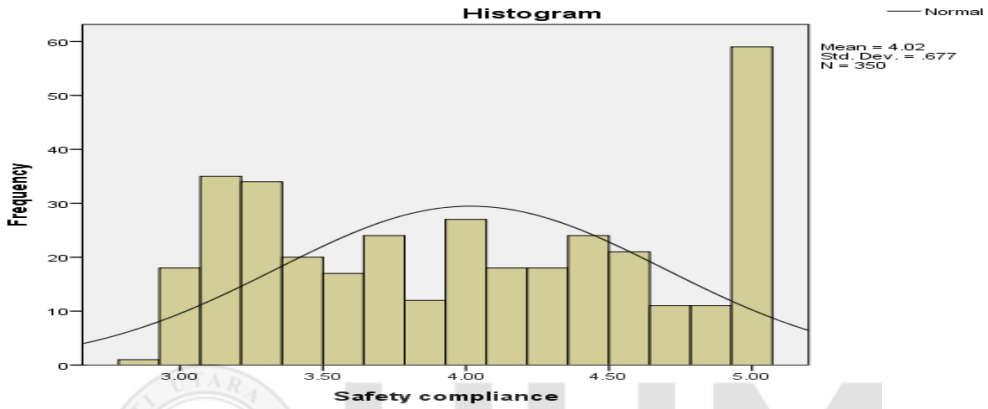

Figure 4.1. *Histogram of Safety Compliance*

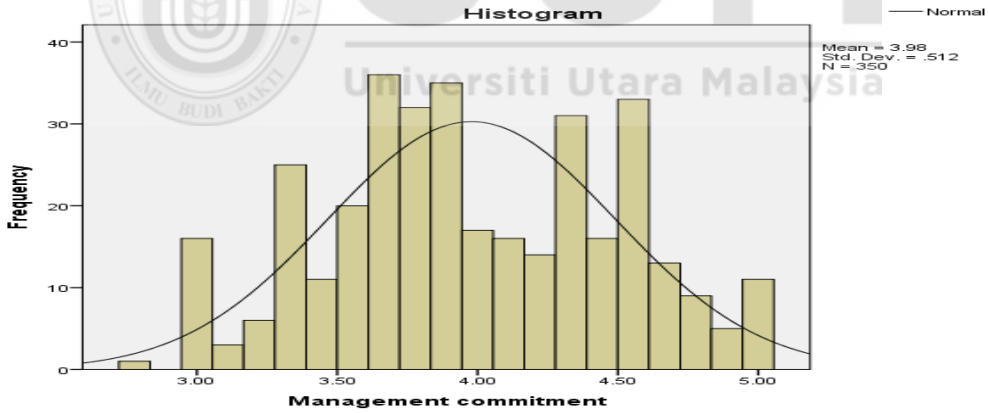

Figure 4.2. *Histogram of Management Commitment*

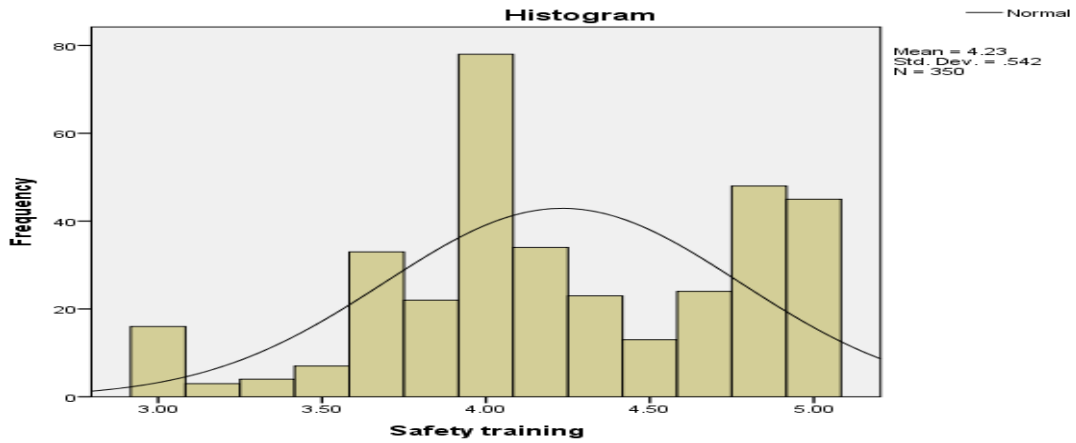

Figure 4.3. *Histogram of Safety Training*

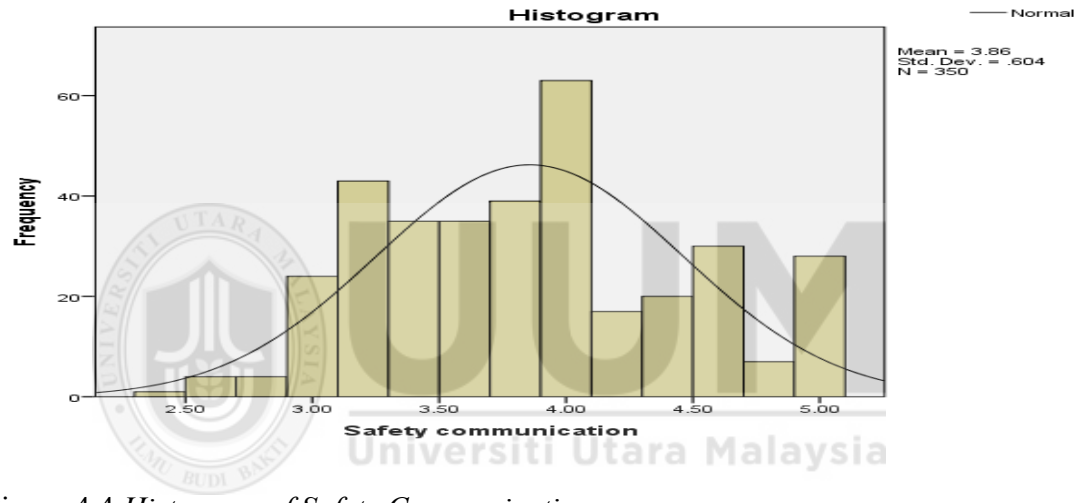

Figure 4.4 *Histogram of Safety Communication*

4.5 Factor Analysis Results

As indicated in Table 4.4, the KMO coefficients exhibit a range from 0.628 to 0.880. The KMO coefficient associated with safety compliance is 0.820, that for management commitment is 0.813, for safety training is 0.880, and for safety communication is 0.628. The explained variances range from 42.02% to 62.38%. Consequently, KMO values exceeding 0.50 are deemed acceptable. Furthermore, the results of the Bartlett's Test of Sphericity (BtoS) for all variables are statistically significant ($p < 0.01$).

Table 4.4
Results of factor analysis

Variables	No of item	KMO Value	Bartlett's Test of Sphericity	Eigen value	Variance explain	Sig. P
Safety compliance	7	.820	1763.142	3.806	54.366	.000
management commitment	9	.813	1381.418	3.782	42.021	.000
Safety training	6	.880	1196.821	3.743	62.375	.000
Safety communication	5	.628	587.119	2.404	48.083	.000

*** Kaiser-Meyer-Olkin Index ≥ 0.50 shows that the sampling is adequate for Factor Analysis.

*** Variance percentage shows the total variance percentage for the components with eigenvalues ≥ 1.0

4.6 Descriptive Analysis

4.6.1 Safety compliance

In this research, the safety compliance among employees in Malaysia's manufacturing factory is measured by seven (7) items. There are three negative items expressed in negative form (*) were recoded before analysis to give a true picture of safety compliance. Table 4.5 indicates that four (4) items have the very high score, two (2) items have a high score, and the other one (1) items have a moderate score value. Items that indicated the highest score are '*I ensure the highest levels of safety when I carry out my job.*' (*M* = 4.50, SD = 0.614), followed by '*I use all necessary safety equipment to do my job at the workplace.*' (*M* = 4.48, SD = 0.609), '*I follow correct safety rules and procedures while carrying out my job at the workplace.*' (*M* = 4.47, SD = 0.618), '*I carry out my work in a safe manner.*' (*M* = 4.47, SD = 0.608), '*At times, it may not be practical to follow all safety rules and procedures when performing my job.*' (*M* =

3.45, SD = 1.251), '*Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.*' (*M* = 3.44, SD = 1.320), and lastly '*Occasionally due to lack of time, I deviate from correct and safe work procedures.*' (*M* = 3.31, SD = 1.316). Overall, the score of safety compliance (*M* = 4.02, SD = 0.677) is at the high level.

Table 4.5
Safety compliance

No	Statements	SD	D	N	A	SA	Mean	SD
B1	I use all necessary safety equipment to do my job at the workplace.	0 (0.0)	0 (0.0)	21 (6.0)	141 (40.3)	188 (53.7)	4.48	.609
B2	I carry out my work in a safe manner.	0 (0.0)	0 (0.0)	21 (6.0)	145 (41.4)	184 (52.6)	4.47	.608
B3	I follow correct safety rules and procedures while carrying out my job at the workplace.	0 (0.0)	0 (0.0)	23 (6.6)	138 (39.4)	189 (54.0)	4.47	.618
B4	I ensure the highest levels of safety when I carry out my job.	1 (0.3)	0 (0.0)	16 (4.6)	140 (40.0)	193 (55.1)	4.50	.614
*B5	Occasionally due to lack of time, I deviate from correct and safe work procedures.	79 (22.6)	99 (28.3)	58 (16.6)	78 (22.3)	36 (10.3)	3.31	1.316
*B6	Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures.	96 (27.4)	101 (28.9)	42 (12.0)	84 (24.0)	27 (7.7)	3.44	1.320

*B7	At times, it may not be practical to follow all safety rules and procedures when performing my job.	85 (24.3)	108 (30.9)	60 (17.1)	73 (20.9)	24 (6.9)	3.45	1.251
	Overall						**4.02**	**.677**

(Level: Very low = 1.00 – 1.80, Low = 1.81 – 2.60, Moderate = 2.61 – 3.40, High = 3.41 – 4.20, Very high = 4.21 - 5.00)

*Negative item

4.6.2 Management Commitment

In this study, management commitment was assessed using nine items among employees in Malaysia's modular house manufacturing sector. Three of the items were negatively worded and were recoded prior to analysis to ensure an accurate representation of management commitment. As illustrated in Table 4.6, five items received very high mean scores, three items were rated at a high level, and one item obtained a moderate score. The highest-rated item was "Safety is given high priority by the management in our workplace" (M = 4.45, SD = 0.644), followed by "Safety rules and procedures are strictly enforced and followed by management in the workplace" (M = 4.39, SD = 0.632), "Corrective action is always taken when the management is told about unsafe practices" (M = 4.32, SD = 0.669), "My company provides sufficient personal protective equipment for the workers" (M = 4.30, SD = 0.698), and "When near-miss accidents are reported, my management acts quickly to solve the problems" (M = 4.27, SD = 0.739). The recoded negative items included "Members of the management do not attend safety meetings" (M = 3.83, SD = 1.134), "Management

considers safety to be equally important as production" (M = 3.75, SD = 1.163), "In my workplace, managers/engineers/supervisors do not show interest in the safety of workers" (M = 3.73, SD = 1.233), and "I feel that management is willing to compromise on safety for increasing production output" (M = 2.76, SD = 1.252). Overall, the mean score for management commitment was 3.98 (SD = 0.512), indicating a high level of perceived commitment to safety from management.

Table 4.6
Management commitment

No	Statements	SD	D	N	A	SA	Mean	SD
C8	Safety is given high priority by the management in our workplace.	0 (0.0)	2 (0.6)	23 (6.6)	141 (40.3)	184 (52.6)	4.45	.644
C9	Safety rules and procedures are strictly enforced and followed by management in the workplace.	0 (0.0)	0 (0.0)	28 (8.0)	157 (44.9)	165 (47.1)	4.39	.632
C10	Corrective action is always taken when the management is told about unsafe practices.	1 (0.3)	2 (0.6)	28 (8.0)	172 (49.1)	147 (42.0)	4.32	.669
*C11	In my workplace, managers/engineers/supervisors do not show interest in the safety of workers.	109 (31.1)	137 (39.1)	30 (8.6)	50 (14.3)	24 (6.9)	3.73	1.233

C12	Management considers safety to be equally important as production.	17 (4.9)	48 (13.7)	45 (12.9)	136 (38.9)	104 (29.7)	3.75	1.163
*C13	Members of the management do not attend safety meetings.	110 (31.4)	143 (40.9)	43 (12.3)	36 (10.3)	18 (5.1)	3.83	1.134
*C14	I feel that management is willing to compromise on safety for increasing production output.	39 (11.1)	71 (20.3)	62 (17.7)	124 (35.4)	54 (15.4)	2.76	1.252
C15	When near-miss accidents are reported, my management acts quickly to solve the problems.	0 (0.0)	9 (2.6)	34 (9.7)	161 (46.0)	146 (41.7)	4.27	.739
C16	My company provides sufficient personal protective equipment for the workers.	0 (0.0)	4 (1.1)	36 (10.3)	160 (45.7)	150 (42.9)	4.30	.698
	Overall						**3.98**	**.512**

(Level: Very low = 1.00 – 1.80, Low = 1.81 – 2.60, Moderate = 2.61 – 3.40, High = 3.41 – 4.20, Very high = 4.21 - 5.00)

*Negative item

4.6.3 Safety training

In this study, safety training among employees in Malaysia's modular house manufacturing sector was measured using six items. One of these items was negatively worded and was recoded before analysis to accurately reflect perceptions of safety

training. As presented in Table 4.7, five of the items received very high mean scores, while one item was rated at a high level. The item with the highest mean score was *"Safety issues are given high priority in training programmes"* (M = 4.40, SD = 0.625), followed by *"The safety training provided to me is sufficient to help me identify and assess hazards in my workplace"* (M = 4.35, SD = 0.638), and *"Newly recruited employees receive sufficient training to understand and follow safety rules and procedures"* (M = 4.35, SD = 0.624). Other highly rated items included *"My company gives comprehensive training to the employees in workplace health and safety issues"* (M = 4.33, SD = 0.650), and *"Management actively encourages employees to participate in safety training programs"* (M = 4.23, SD = 0.689). The recoded negative item, *"I am not adequately trained to respond to emergency situations in my workplace,"* received a slightly lower mean score (M = 3.73, SD = 1.117). Overall, the mean score for safety training was 4.23 (SD = 0.542), indicating a very high level of perceived effectiveness in safety training programs.

Table 4.7
Safety training

No	Statements	SD	D	N	A	SA	Mean	SD
D17	My company gives comprehensive training to the employees in workplace health and safety issues.	1 (0.3)	0 (0.0)	29 (8.3)	172 (49.1)	148 (42.3)	4.33	.650
D18	Newly recruited employees receive sufficient training to understand and follow safety rules and procedures.	0 (0.0)	2 (0.6)	22 (6.3)	176 (50.3)	150 (42.9)	4.35	.624

D19	Safety issues are given high priority in training programmes.	0 (0.0)	0 (0.0)	26 (7.4)	157 (44.9)	167 (47.7)	4.40	.625
*D20	I am not adequately trained to respond to emergency situations in my workplace.	87 (24.9)	156 (44.6)	51 (14.6)	36 (10.3)	20 (5.7)	3.73	1.117
D21	Management actively encourages employees to participate in safety training programs.	2 (0.6)	2 (0.6)	34 (9.7)	188 (53.7)	124 (35.4)	4.23	.689
D22	The safety training provided to me is sufficient to help me identify and assess hazards in my workplace.	0 (0.0)	2 (0.6)	25 (7.1)	170 (48.6)	153 (43.7)	4.35	.638
	Overall						**4.23**	**.542**

(Level: Very low = 1.00 – 1.80, Low = 1.81 – 2.60, Moderate = 2.61 – 3.40, High = 3.41 – 4.20, Very high = 4.21 - 5.00)

*Negative item

4.6.4 Safety communication

In this study, safety communication among employees in Malaysia's modular house manufacturing sector was assessed using five items. Four of these items were negatively worded and were recoded prior to analysis to accurately reflect the respondents' perceptions of safety communication. As shown in Table 4.8, all five items received high mean scores. The item with the highest rating was *"There is sufficient opportunity*

to discuss and deal with safety issues in meetings" (M = 4.09, SD = 0.647), followed by *"There is open communication about safety issues in this workplace"* (M = 4.04, SD = 0.727), and *"Management operates an open-door policy on safety issue*s" (M = 3.95, SD = 0.840). The negatively worded items, which were recoded, include *"My company does not have a hazard reporting system that allows employees to communicate potential hazards before incidents occur in the workplace"* (M = 3.62, SD = 1.074), and *"The targets and goals for safety performance in my organization are not clearly communicated to the employees"* (M = 3.58, SD = 1.072). Overall, the mean score for safety communication (M = 3.86, SD = 0.604) indicates a high level of perceived communication effectiveness in the workplace.

Table 4.8
Safety communication

No	Statements	SD	D	N	A	SA	Mean	SD
*E23	My company does not have a hazard reporting system that allows employees to communicate potential hazards before incidents occur in the workplace.	69 (19.7)	156 (44.6)	60 (17.1)	52 (14.9)	13 (3.7)	3.62	1.074
E24	Management operates an open door policy on safety issues.	4 (1.1)	12 (3.4)	73 (20.9)	171 (48.9)	90 (25.7)	3.95	.840
E25	There is sufficient opportunity to discuss and deal with safety issues in meetings.	0 (0.0)	2 (0.6)	52 (14.9)	207 (59.1)	89 (25.4)	4.09	.647

*E26	The targets and goals for safety performance in my organization are not clearly communicated to the employees.	65 (18.6)	154 (44.0)	64 (18.3)	54 (15.4)	13 (3.7)	3.58	1.072
E27	There is open communication about safety issues in this workplace.	0 (0.0)	8 (2.3)	61 (17.4)	189 (54.0)	92 (26.3)	4.04	.727
	Overall						**3.86**	**.604**

(Level: Very low = 1.00 – 1.80, Low = 1.81 – 2.60, Moderate = 2.61 – 3.40, High = 3.41 – 4.20, Very high = 4.21 - 5.00)

*Negative item

4.7 Correlation Analysis

Correlation analysis is used to examine the relationship between the dependent and independent variables, indicating the direction, significance, and strength of these associations. The results of the Pearson Correlation analysis are presented in Table 4.9.

Table 4.9
Pearson Correlation Coefficient Analysis

	Safety compliance	**Management commitment**	**Safety training**	**Safety communication**
Safety compliance	1	.734**	.658**	.663**
Management commitment	.734**	1	.794**	.744**
Safety training	.658**	.794**	1	.716**
Safety communication	.663**	.744**	.716**	1

** $p < 0.01$

Table 4.9, which presents the Pearson Correlation Coefficient matrix, indicates that management commitment ($r = 0.734$, $p < 0.01$), safety training ($r = 0.658$, $p < 0.01$), and safety communication ($r = 0.663$, $p < 0.01$) each exhibit a positive correlation with safety compliance in Malaysia's modular house manufacturing sector. These results suggest that the relationships among all variables are statistically significant.

4.8 Multiple Regression

A thorough multiple linear regression analysis was conducted to assess the impact of three independent variables which are management commitment, safety training, and safety communication and on the dependent variable, safety compliance. The regression model was statistically significant, $F(3, 346) = 156.118$, $p < 0.001$, indicating that the model reliably predicts safety compliance. The R-squared value of 0.575 suggests that approximately 57.5% of the variance in safety compliance can be explained by the three predictors.

Furthermore, consistent with the directional nature of the hypotheses, one-tailed significance tests were considered appropriate. All three predictors showed positive and statistically significant relationships with safety compliance: management commitment ($\beta = 0.616$, $p < 0.001$), safety training ($\beta = 0.159$, $p = 0.0185$), and safety communication ($\beta = 0.252$, $p < 0.001$). These results provide empirical support for H1, H2, and H3, confirming that stronger management commitment, more effective safety training, and enhanced safety communication are each associated with higher levels of safety compliance.

Table 4.10
Coefficient analysis for safety compliance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. P
		B	Std. Error	Beta		
1	(Constant)	-.078	.196		-.395	.693
	Management commitment	.616	.084	.466	7.365	.000
	Safety training	.159	.076	.127	2.096	.037
	Safety communication	.252	.062	.225	4.085	.000
a. Dependent Variable: Safety compliance						
R-square = 0.575, F(3, 346) = 156.118, Sig. F = 0.000						

The analysis reveals a strong positive relationship between management commitment and safety compliance in Malaysia's modular house manufacturing sector, with $\beta = 0.466$, $t(346) = 7.365$, $p < 0.01$. Safety training also shows a statistically significant association with safety compliance, as indicated by $\beta = 0.127$, $t(346) = 2.096$, $p < 0.05$. In addition, safety communication is significantly related to safety compliance, with $\beta = 0.225$, $t(346) = 4.085$, $p < 0.01$. Based on these outcomes, all three alternative hypotheses (H1, H2, and H3) are supported. Among the predictors, management commitment exhibits the strongest influence on safety compliance, followed by safety communication and safety training, highlighting its pivotal role in promoting safe work practices within the modular house manufacturing industry in Malaysia.

Therefore, there a summary of hypothesis:

H1: There is a significant positive relationship between management commitment and safety compliance.

Table 4.10 reveals that management commitment shows a strong and statistically significant relationship with safety compliance, indicated by a standardized coefficient of $\beta = 0.466$, $t(346) = 7.365$, $p < 0.01$. Therefore, Hypothesis H1 is supported, confirming a significant positive association between management commitment and safety compliance in the modular house manufacturing industry.

H2: There is a significant positive relationship between safety training and safety compliance.

Table 4.10 indicates that safety training has a positive and statistically significant relationship with safety compliance, as reflected by $\beta = 0.127$, $t(346) = 2.096$, $p < 0.05$. Accordingly, Hypothesis H2 is supported, confirming a significant positive association between safety training and safety compliance in the modular house manufacturing industry.

H3: There is a significant positive relationship between safety communication and safety compliance.

Table 4.10 shows that safety communication is positively and significantly associated with safety compliance, with a standardized coefficient of $\beta = 0.225$, $t(346) = 4.085$, $p < 0.01$. As a result, Hypothesis H3 is supported, confirming a meaningful positive relationship between safety communication and safety compliance in the modular house manufacturing industry.

4.9 Conclusion

This chapter outlines the results obtained from the data analysis conducted to address the study's research objectives. The findings are systematically presented in their corresponding sections. Three hypotheses were evaluated, and it is important to highlight that all three were supported by the data.

Table 4.11
Conclusion of Hypothesis

	Hypothesis	**Result**
H1	There is a significant positive relationship between management commitment and safety compliance.	Accepted
H2	There is a significant positive relationship between safety training and safety compliance.	Accepted
H3	There is a significant positive relationship between safety communication and safety compliance.	Accepted

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter provides an in-depth interpretation of the study's main findings by connecting the statistical outcomes with relevant literature and theoretical insights. The discussion is organized according to the research objectives and hypotheses, with Social Exchange Theory (SET), originally formulated by Blau (1964), serving as the foundational theoretical lens. The chapter explores the influence of the three independent variables, management commitment, safety training, and safety communication on the dependent variable, safety compliance, within the context of Malaysia's modular house manufacturing industry. Furthermore, it outlines the study's theoretical and practical implications, addresses its limitations, and proposes directions for future research.

5.2 Discussion

5.2.1 Management Commitment and Safety Compliance

The results indicate that management commitment is the most influential predictor of employee safety compliance ($\beta = 0.466$, $p < 0.01$), confirming Hypothesis H1. This aligns with previous studies showing that visible management support such as allocating resources, promoting safety policies, and modeling safe behavior positively impacts compliance behavior among employees (Ajmal et al., 2021), (Subramaniam et

al., 2016), (Farouk, 2017). According to Social Exchange Theory, such managerial behavior signals care and commitment to employee well-being, prompting employees to reciprocate through greater compliance with safety rules. Empirical evidence from Malaysian manufacturing and oil and gas sectors confirms that strong managerial commitment enhances compliance and reduces workplace accidents (Ajmal et al., 2022).

5.2.2 Safety Training and Safety Compliance

The findings indicate a statistically significant yet relatively modest positive association between safety training and safety compliance ($\beta = 0.127$, $p < 0.05$), thereby supporting Hypothesis H2. In comparison to management commitment and safety communication, the lower beta coefficient implies that safety training has the smallest standalone influence on compliance behavior.

Safety training plays a critical role in providing employees with the essential knowledge and practical skills to identify workplace hazards, adhere to standard operating procedures (SOPs), and respond appropriately in emergency situations.

However, the findings suggest that training alone is insufficient unless it is reinforced by active leadership and clear communication. This is especially critical in manufacturing environments with foreign workers who may face language or literacy barriers.

Training programs must be tailored to the audience's needs, using hands-on activities, visual aids, and role-specific instruction. According to SET, training is a form of employer investment; employees will reciprocate only if they perceive it as relevant, accessible, and sincere. Without managerial reinforcement or follow-up, training may not translate into sustained behavioral change. Hence, training must be integrated into a broader safety system that includes leadership engagement and communication to be fully effective.

5.2.3 Safety Communication and Safety Compliances

The analysis demonstrates that safety communication has a moderate but significant positive impact on safety compliance ($\beta = 0.225$, $p < 0.01$), making it the second strongest predictor after management commitment. This supports previous research that highlights the importance of clear and accessible communication in shaping employee safety behavior. Studies show that transparent and two-way communication where employees can both receive safety information and express concerns enhances trust, mutual respect, and participation in safety practices (Haas & Yorio, 2021). Furthermore, when leaders promote a communicative environment that includes feedback loops and active listening, workers feel valued and more committed to safe behavior (Mattson, Hellgren, and Göransson (2015). According to Social Exchange Theory, these relational dynamics foster a perception of organizational care, prompting employees to reciprocate with greater compliance. In manufacturing settings with multilingual and multi-shift operations, communication strategies such as multilingual signage, team briefings, and peer interactions are especially effective in promoting

consistent safety behaviors (Lümker, 2012). Thus, safety communication not only delivers operational instructions but also reinforces the relational fabric necessary for sustaining a proactive safety culture.

5.3 Contributions of the Study

5.3.1 Theoretical Contributions

This research adds to the academic discourse by applying Social Exchange Theory (SET), initially introduced by Blau (1964), to the context of occupational safety in Malaysia's manufacturing industry. According to SET, employee behavior is influenced by reciprocal relationships when organizations offer support, employees are likely to respond with positive actions. The findings of this study illustrate SET in practice, as employees interpret management commitment, safety training, and safety communication as indicators of the organization's investment in their safety and overall welfare. In response, employees exhibit greater safety compliance, not merely out of obligation to rules, but as a form of social reciprocation. The results show that clear communication, meaningful training, and visible leadership foster trust and mutual respect by key relational drivers in the exchange process. Thus, the study not only empirically supports SET but also enriches its theoretical scope by illustrating how workplace safety behaviors emerge from trust-based social dynamics rather than enforcement alone. This reinforces the idea that voluntary compliance can be cultivated through positive, relational practices that align with the social contract between employer and employee.

5.3.2 Practical Contributions

This study offers important practical contributions for Occupational Safety and Health (OSH) practitioners and factory managers in the manufacturing industry. The findings emphasize that safety compliance is strongly influenced by relational and organizational factors particularly management commitment, safety training, and effective communication. For OSH practitioners, the results highlight the need to design and implement safety programs that go beyond technical instruction by fostering employee engagement, trust, and understanding. Training initiatives should be adapted to accommodate a diverse workforce, incorporating multilingual content, visual aids, and hands-on demonstrations to ensure inclusivity and effectiveness across job roles and educational backgrounds. For factory managers, the study reinforces the importance of leading by example through visible involvement in safety practices, consistent enforcement of procedures, and prompt response to safety concerns. These actions demonstrate managerial support, which employees are likely to reciprocate with safer behavior. Additionally, the creation of two-way communication channels, such as regular safety briefings, anonymous reporting systems, and open-door feedback mechanisms, empowers workers to voice concerns and contribute to continuous safety improvement. By applying these strategies, both OSH professionals and managers can enhance workplace safety culture and drive long-term compliance among employees.

5.4 Limitations of the Study

Although this study provides meaningful insights into how management commitment, safety training, and safety communication impact safety compliance, several limitations should be recognized. To begin with, the research was limited to one modular housing manufacturing firm in Malaysia. While the organization served as an appropriate context for examining the targeted variables, the results may not be applicable to other industries, locations, or companies that differ in operational practices and safety culture. In addition, despite the use of random sampling, there remains the possibility of sampling bias, as certain departments or shift groups may have been underrepresented due to limited access during the data collection period. This could influence the overall representativeness of the sample.

Another limitation concerns the cultural and linguistic diversity of the workforce. Given that the manufacturing sector often comprises employees from different ethnic and language backgrounds, variations in interpretation and comprehension of the questionnaire items may have affected the consistency of responses particularly in relation to the safety communication construct. Lastly, the scope of the study was limited to three organizational predictors. While these factors were selected based on strong theoretical grounding and prior literature, other important variables such as supervisory support, organizational justice, safety climate, or employee engagement were not examined and may also play a critical role in shaping safety compliance behaviors.

5.5 Recommendations for Future Research

Although this study has offered important insights into how management commitment, safety training, and safety communication affect safety compliance in Malaysia's manufacturing industry, there remain several areas that merit further exploration. The recommendations below are proposed in response to the specific limitations outlined in this study.

Firstly, given that the study was limited to a single modular housing manufacturing company, future research should consider adopting a multi-site approach involving organizations from diverse manufacturing sub-sectors such as electronics, automotive, food processing, and heavy machinery. Including companies of varying sizes, ownership types, and geographic locations across Peninsular and East Malaysia would improve the generalizability of findings and allow for cross-industry comparisons of safety compliance practices and challenges.

Secondly, the issue of sampling bias particularly the potential underrepresentation of certain groups can be addressed in future studies by implementing stratified random sampling techniques. This ensures more balanced representation across departments, job levels, and shift schedules, thereby enhancing the reliability of the data.

Thirdly, given the cultural and language diversity often present in manufacturing workforces, future research should consider examining how language proficiency, ethnic background, or cultural values may influence perceptions of

management commitment or interpretation of safety messages. A focus on these moderating variables will offer a more context-sensitive understanding of safety behavior in Malaysia's multiethnic industrial environment.

Additionally, future studies should broaden the scope of variables explored. While this study focused on three organizational predictors, future models should include additional psychosocial and organizational variables such as supervisory support, job satisfaction, organizational justice, and safety climate. These factors may function as mediating or moderating variables, offering a more complete understanding of the underlying mechanisms that shape safety compliance.

Lastly, since this study employed a purely quantitative approach, it lacked in-depth insight into the personal experiences, motivations, and perceptions of workers. Future studies are encouraged to incorporate qualitative or mixed-method approaches such as interviews, focus group discussions, or ethnographic methods to gain deeper insights into the reasons behind employee compliance or non-compliance with safety protocols. This would enhance the richness of the data and help uncover factors that are not easily captured through surveys alone.

By addressing these limitations through methodological, contextual, and theoretical enhancements, future research can strengthen the depth, applicability, and impact of occupational safety studies in Malaysia's manufacturing sector.

5.6 Conclusions

This research examined the influence of management commitment, safety training, and safety communication on safety compliance within Malaysia's manufacturing sector. The findings reveal that all three organizational elements significantly and positively impact safety compliance, with management commitment identified as the most influential factor. This underscores the importance of leadership actions such as allocating adequate resources, demonstrating a visible commitment to safety, and supporting frontline safety initiatives in encouraging adherence to safety protocols and responsible behavior at work.

These outcomes align with the principles of Social Exchange Theory (Blau, 1964), which posits that employees are more likely to reciprocate when they perceive strong organizational support.. When leaders invest in employee safety through training and communication, workers reciprocate with greater compliance, viewing it as part of a mutual exchange. Safety communication also showed a substantial impact, reinforcing that ongoing, two-way communication particularly when adapted to multilingual and multicultural workforces enhances understanding, trust, and participation in safety efforts.

Although safety training was found to be the least influential among the three variables, it still played a meaningful role in shaping compliance, particularly by enhancing workers' knowledge, awareness, and preparedness for hazardous situations. Its relative impact suggests that training must be reinforced by leadership engagement and contextualized communication to maximize effectiveness.

In sum, the study offers empirical support for a relational approach to safety compliance, where leadership visibility, customized training, and inclusive communication collectively shape a supportive work environment that encourages safer behavior. Rather than treating these factors in isolation, the results advocate for a system-based, integrated strategy to workplace safety one that leverages both organizational structures and human relationships to sustain long-term compliance and reduce risk across Malaysia's manufacturing sector

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Appendix A

Survey Form Questionaire

Survey Form

The Influence of Management Commitment, Safety Training and Safety Communication on Safety Compliance in a Malaysia's Manufacturing Factory

Pengaruh Komitmen Pengurusan, Latihan Keselamatan dan Komunikasi Keselamatan terhadap Pematuhan Keselamatan di sebuah Kilang Pembuatan di Malaysia

Greetings,

The researcher is a Master's student in Occupational Safety and Health Management at the School of Business Management, College of Business, Universiti Utara Malaysia (UUM).

You are kindly requested to complete this survey questionnaire. Your cooperation is highly appreciated.

All responses provided will be kept **CONFIDENTIAL**.

For any inquiries regarding this survey, please contact Muhammad Danial bin Othman at 017-4071830

Salam sejahtera,

Penyelidik merupakan pelajar Sarjana Sains (Pengurusan Keselamatan & Kesihatan Pekerjaan) di Pusat Pengajian Pengurusan Perniagaan, Kolej Perniagaan, Universiti Utara Malaysia (UUM).

Saudara/saudari diminta untuk melengkapkan borang soal selidik ini. Kerjasama daripada saudara/saudari amat dihargai.

*Segala maklum balas yang diberikan adalah **RAHSIA**.*

Sebarang pertanyaan berhubung soal selidik ini boleh menghubungi Muhammad Danial bin Othman di talian 017-4071830

SECTION (A) DEMOGRAPHIC INFORMATION

BAHAGIAN (A) MAKLUMAT DEMOGRAFI

PERSONAL INFORMATION

MAKLUMAT PERIBADI

1. Age (Umur)

Below 25 years / Bawah 25 tahun	25 – 34 years / 25 – 34 tahun	35 – 44 years / 35 – 44 tahun	45 – 54 years / 45 – 54 tahun	55 years and above / 55 tahun ke atas

2. Gender (Jantina)

Male / Lelaki	Female /Perempuan

3. Marital Status (Status Perkahwinan)

Single / Bujang	Married / Berkahwin	Divorced / Bercerai

4. Nationality (Warganegara)

Malaysia	Bangladesh	Myanmar

EMPLOYMENT INFORMATION

MAKLUMAT PEKERJAAN

1. Department (Jabatan)

Production / Pengeluaran	Maintenance / Penyelenggaraan	Quality Assurance / Kawalan Kualiti	Engineering / Kejuruteraan	Warehouse / Gudang	Office Staff / Staff Pejabat

2. Work Shift (Syif Bekerja)

Day Shift / Syif Pagi	Noon Shift / Syif Petang	Normal Shift / Syif Normal

SECTION (B) SAFETY COMPLIANCE

BAHAGIAN (B) PEMATUHAN KESELAMATAN

For each item, please select your answer according to the following scale:

Bagi setiap perkara, sila pilih jawapan anda mengikut skala berikut:

1- Strongly Disagree/ Sangat Tidak Setuju

2- Disagree/ Tidak Setuju

3- Neutral/ Neutral

4- Agree/ Setuju

5- Strongly Agree/ Sangat Setuju

	1	2	3	4	5
1. I use all necessary safety equipment to do my job at the workplace. *Saya menggunakan semua peralatan keselamatan yang diperlukan untuk menjalankan tugas saya di tempat kerja.*					
2. I carry out my work in a safe manner. *Saya menjalankan kerja saya dengan selamat.*					
3. I follow correct safety rules and procedures while carrying out my job at the workplace. *Saya mengikuti peraturan dan prosedur keselamatan yang betul semasa menjalankan tugas saya di tempat kerja.*					
4. I ensure the highest levels of safety when I carry out my job. Saya memastikan tahap keselamatan yang tertinggi ketika melaksanakan tugas saya.					
5. Occasionally due to lack of time, I deviate from correct and					

safe work procedures. *Kadang-kadang, disebabkan kekurangan masa, saya menyimpang daripada prosedur kerja yang betul dan selamat.*					
6. Occasionally due to over familiarity with the job, I deviate from correct and safe work procedures. *Kadang-kadang, disebabkan terlalu biasa dengan tugas tersebut, saya menyimpang daripada prosedur kerja yang betul dan selamat.*					
7. At times, it may not be practical to follow all safety rules and procedures when performing my job. *Ada kalanya, mungkin tidak praktikal untuk mengikuti semua peraturan dan prosedur keselamatan ketika menjalankan tugas saya*.					

SECTION (C) ***MANAGEMENT COMMITMENT***

BAHAGIAN (C) KOMITMEN PENGURUSAN

For each item, please select your answer according to the following scale:

Bagi setiap perkara, sila pilih jawapan anda mengikut skala berikut:

1- Strongly Disagree/ Sangat Tidak Setuju

2- Disagree/ Tidak Setuju

3- Neutral/ Neutral

4- Agree/ Setuju

5- Strongly Agree/ Sangat Setuju

	1	2	3	4	5
1. Safety is given high priority by the management in our workplace. *Keselamatan diberikan keutamaan tinggi oleh pihak pengurusan di tempat kerja kami.*					
2. Safety rules and procedures are strictly enforced and followed by management in the workplace. *Peraturan dan prosedur keselamatan dikuatkuasakan dan dipatuhi dengan tegas oleh pihak pengurusan di tempat kerja.*					
3. Corrective action is always taken when the management is told about unsafe practices. *Tindakan pembetulan sentiasa diambil apabila pihak pengurusan dimaklumkan tentang amalan yang tidak selamat.*					
4. In my workplace, managers/engineers/supervisors do not show interest in the safety of workers.					

Di tempat kerja saya, pengurus/jurutera/penyelia tidak menunjukkan minat terhadap keselamatan pekerja.						
5. Management considers safety to be equally important as production. *Pihak pengurusan menganggap keselamatan sama penting seperti pengeluaran.*						
6. Members of the management do not attend safety meetings. *Pihak pengurusan tidak menghadiri mesyuarat keselamatan.*						
7. I feel that management is willing to compromise on safety for increasing production output. *Saya merasakan bahawa pihak pengurusan bersedia untuk berkompromi dalam aspek keselamatan demi meningkatkan hasil pengeluaran.*						
8. When near-miss accidents are reported, my management acts quickly to solve the problems. *Apabila kejadian hampir kemalangan dilaporkan, pihak pengurusan saya bertindak cepat untuk menyelesaikan masalah tersebut.*						
9. My company provides sufficient personal protective equipment for the workers. *Syarikat saya menyediakan peralatan perlindungan peribadi yang mencukupi untuk pekerja.*						

SECTION (D) ***SAFETY TRAINING***

BAHAGIAN (D) LATIHAN KESELAMATAN

For each item, please select your answer according to the following scale:

Bagi setiap perkara, sila pilih jawapan anda mengikut skala berikut:

1- Strongly Disagree/ Sangat Tidak Setuju

2- Disagree/ Tidak Setuju

3- Neutral/ Neutral

4- Agree/ Setuju

5- Strongly Agree/ Sangat Setuju

	1	2	3	4	5
1. My company gives comprehensive training to the employees in workplace health and safety issues. *Syarikat saya menyediakan latihan yang komprehensif kepada pekerja mengenai isu-isu kesihatan dan keselamatan di tempat kerja.*					
2. Newly recruited employees receive sufficient training to understand and follow safety rules and procedures. *Pekerja baharu yang direkrut menerima latihan yang mencukupi untuk memahami dan mengikuti peraturan serta prosedur keselamatan.*					
3. Safety issues are given high priority in training programmes. *Isu keselamatan diberikan keutamaan tinggi dalam program latihan.*					
4. I am not adequately trained to respond to emergency situations in my workplace. *Saya tidak menerima latihan yang mencukupi untuk*					

bertindak balas terhadap situasi kecemasan di tempat kerja saya.					
5. Management actively encourages employees to participate in safety training programs. *Pihak pengurusan secara aktif menggalakkan pekerja untuk menyertai program latihan keselamatan.*					
6. The safety training provided to me is sufficient to help me identify and assess hazards in my workplace. *Latihan keselamatan yang diberikan kepada saya adalah mencukupi untuk membantu saya mengenal pasti dan menilai bahaya di tempat kerja saya.*					

SECTION (E) COMMUNICATION

BAHAGIAN (E) KOMUNIKASI

For each item, please select your answer according to the following scale:

Bagi setiap perkara, sila pilih jawapan anda mengikut skala berikut:

1- Strongly Disagree/ Sangat Tidak Setuju

2- Disagree/ Tidak Setuju

3- Neutral/ Neutral

4- Agree/ Setuju

5- Strongly Agree/ Sangat Setuju

	1	2	3	4	5
1. My company does not have a hazard reporting system that allows employees to communicate potential hazards before incidents occur in the workplace. *Syarikat saya tidak mempunyai sistem pelaporan hazad yang membolehkan pekerja menyampaikan hazad yang berpotensi sebelum kejadian berlaku di tempat kerja.*					
2. Management operates an open door policy on safety issues. *Pihak pengurusan mengamalkan dasar pintu terbuka mengenai isu keselamatan.*					
3. There is sufficient opportunity to discuss and deal with safety issues in meetings. *Terdapat peluang yang mencukupi untuk membincangkan dan menangani isu keselamatan dalam mesyuarat.*					
4. The targets and goals for safety performance in my organization are not clearly communicated to the employees. *Sasaran dan matlamat prestasi keselamatan dalam*					

organisasi saya tidak disampaikan dengan jelas kepada pekerja.					
5. There is open communication about safety issues in this workplace. *Terdapat komunikasi yang terbuka mengenai isu keselamatan di tempat kerja ini.*					

Appendix B

Preliminary Analysis Results

Frequency Table

AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 25 years	146	41.7	41.7	41.7
	25 - 34 years	167	47.7	47.7	89.4
	35 - 44 years	34	9.7	9.7	99.1
	45 - 54 years	3	.9	.9	100.0
	Total	350	100.0	100.0	

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	343	98.0	98.0	98.0
	Female	7	2.0	2.0	100.0
	Total	350	100.0	100.0	

MARITAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	195	55.7	55.7	55.7
	Married	153	43.7	43.7	99.4
	Divorced	2	.6	.6	100.0
	Total	350	100.0	100.0	

NATIONALITY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malaysia	189	54.0	54.0	54.0
	Bangladesh	147	42.0	42.0	96.0
	Myanmar	14	4.0	4.0	100.0
	Total	350	100.0	100.0	

DEPARTMENT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Production	267	76.3	76.3	76.3
	Maintenance	6	1.7	1.7	78.0
	Quality assurance	57	16.3	16.3	94.3
	Engineering	9	2.6	2.6	96.9
	Warehouse	2	.6	.6	97.4
	Office staff	9	2.6	2.6	100.0
	Total	350	100.0	100.0	

WORK SHIFT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Day shift	203	58.0	58.0	58.0
	Noon shift	128	36.6	36.6	94.6
	Normal shift	19	5.4	5.4	100.0
	Total	350	100.0	100.0	

Appendix C

Normality Analysis Results

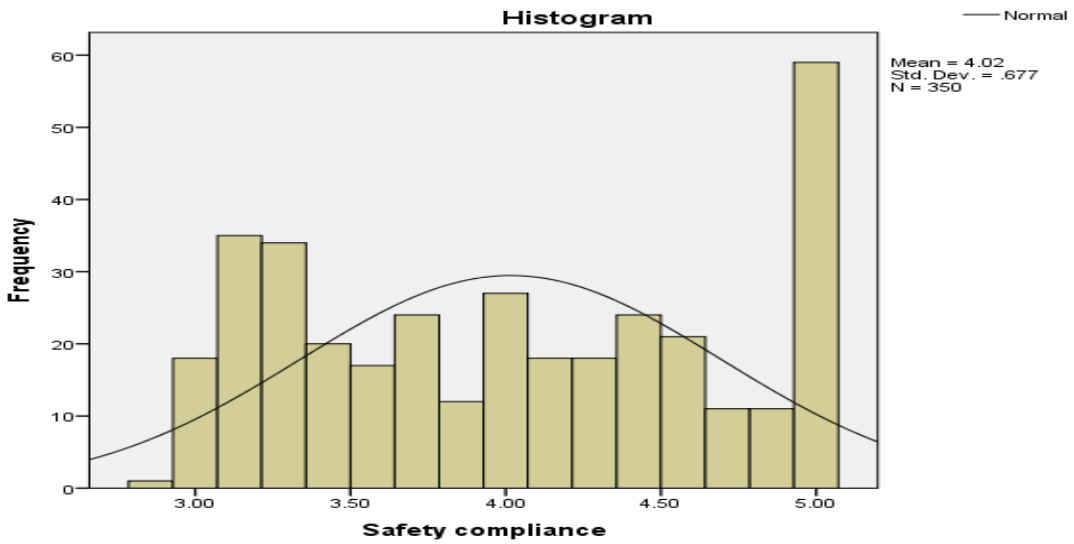
Descriptives

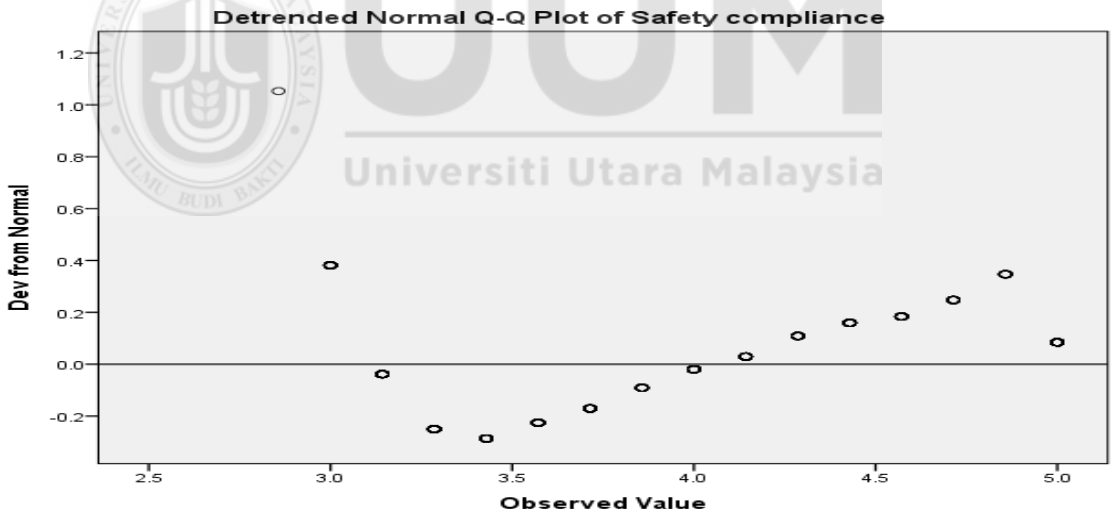
Descriptive Statistics

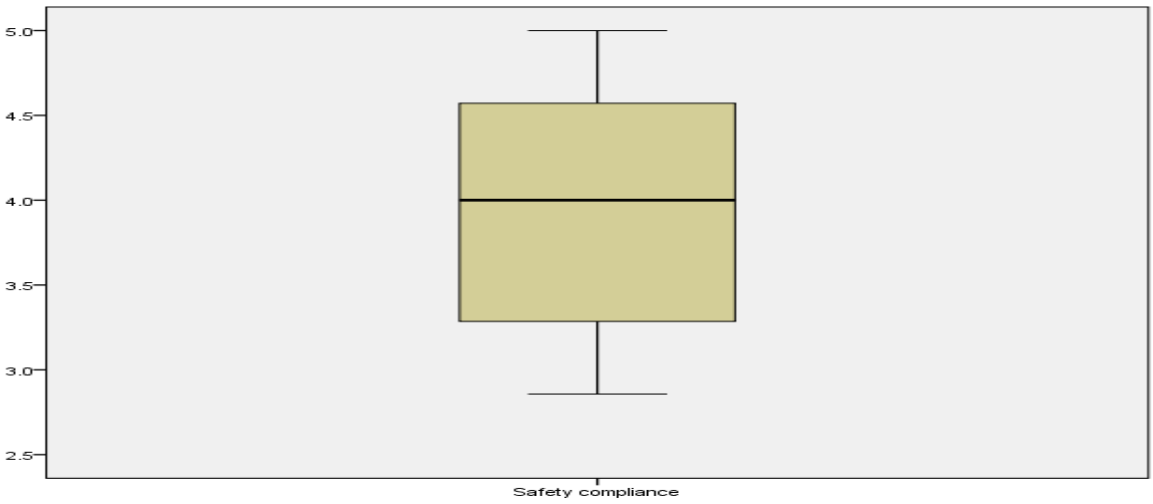
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Safety compliance	350	.083	.130	-1.354	.260
Management commitment	350	.028	.130	-.760	.260
Safety training	350	-.266	.130	-.587	.260
Safety communication	350	.225	.130	-.694	.260
Valid N (listwise)	350				

Explore

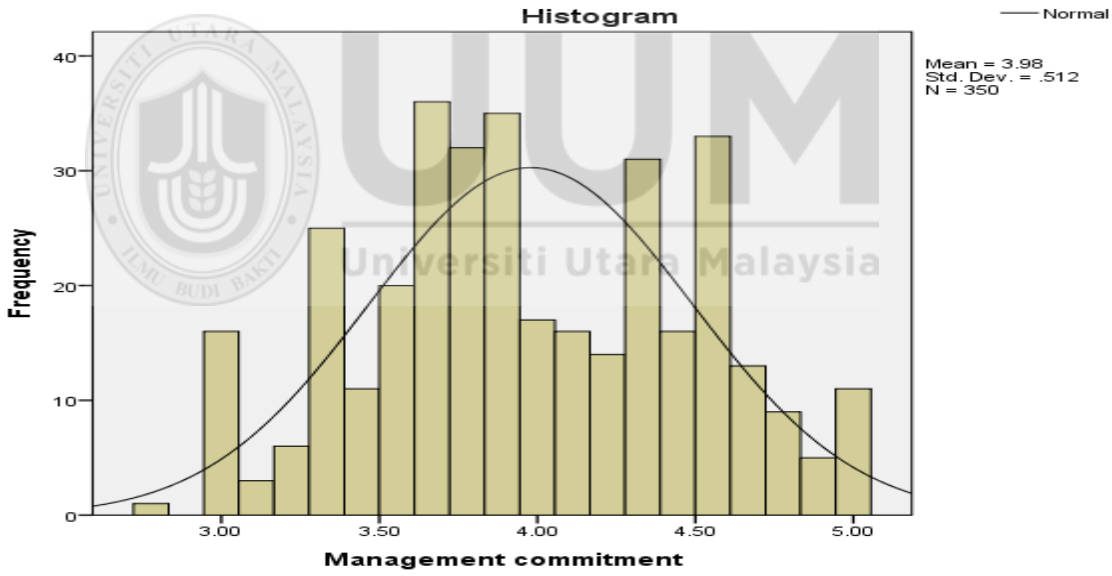
Safety compliance

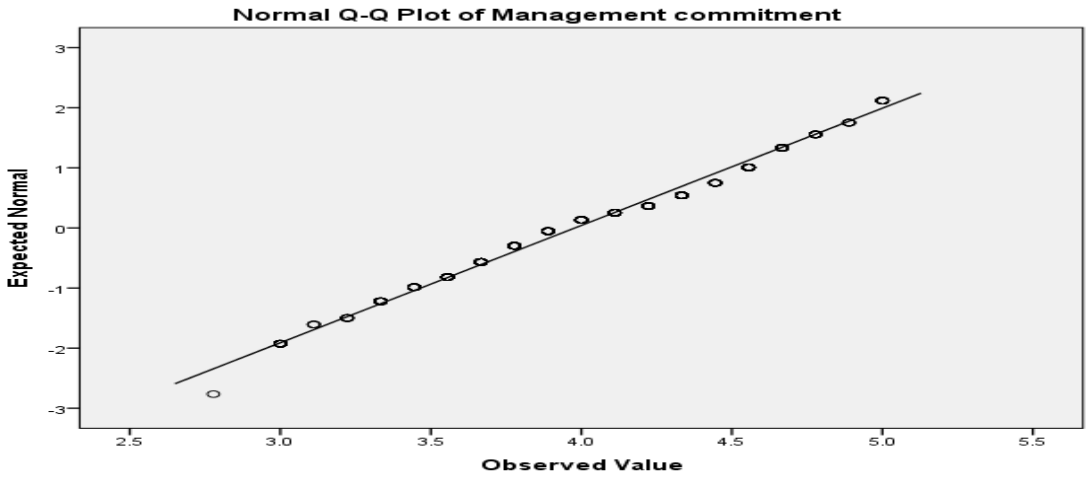


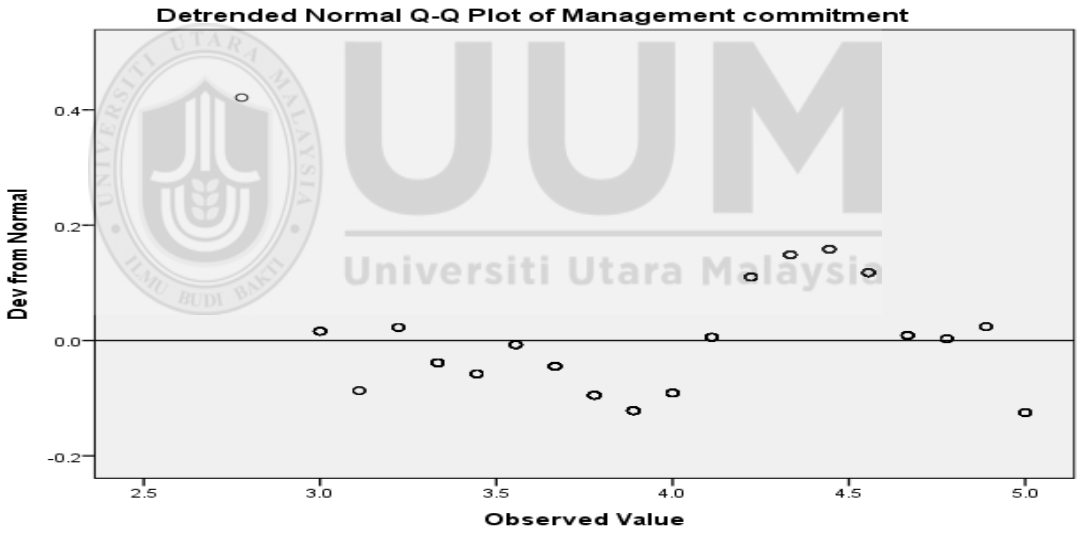


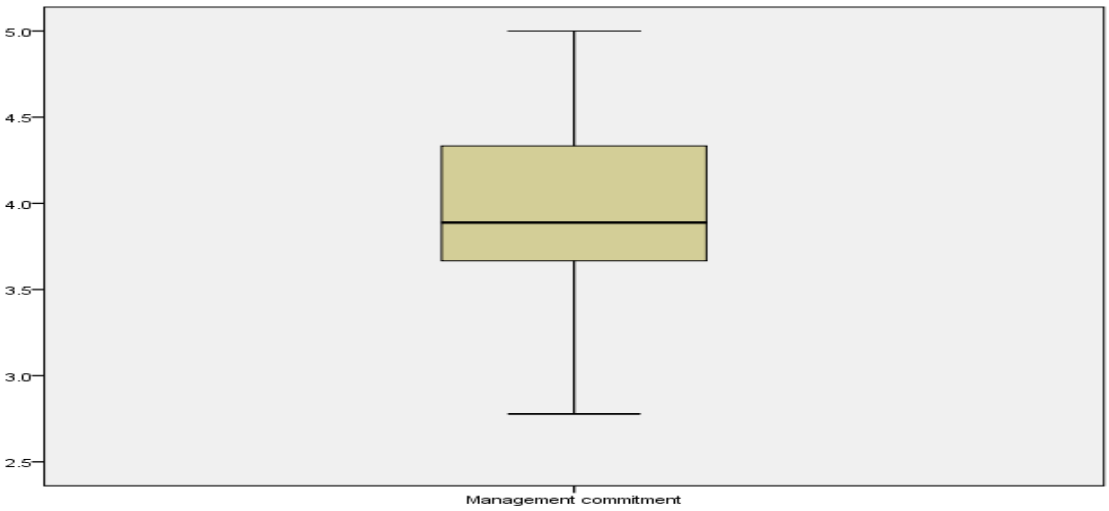


Management commitment

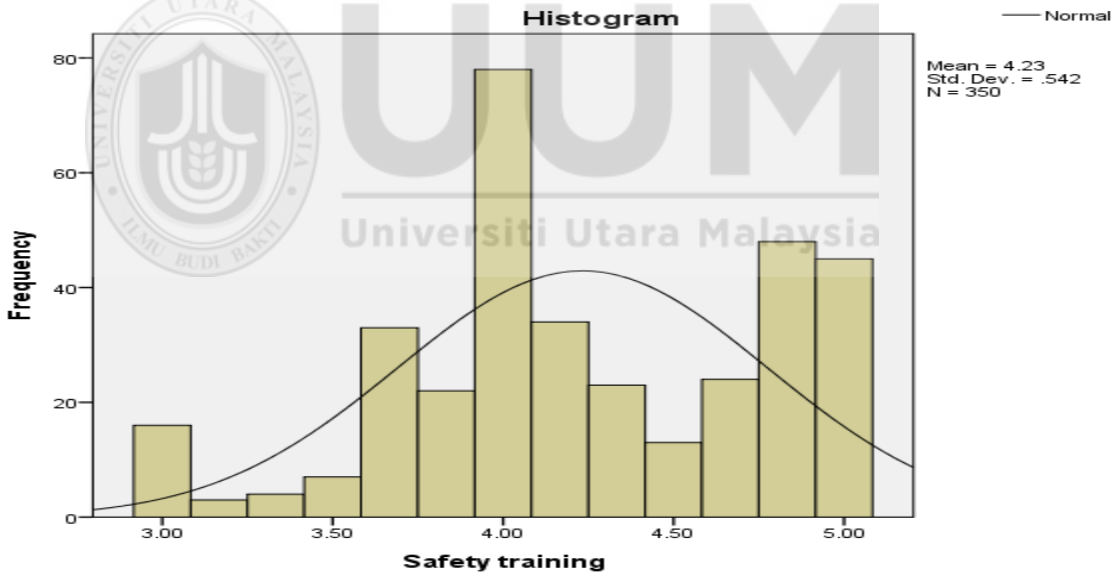


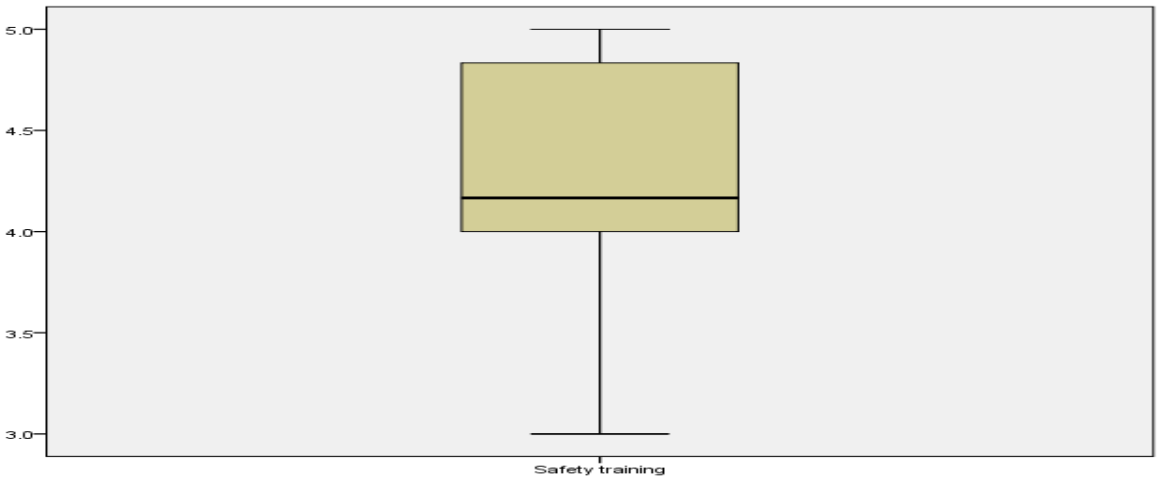




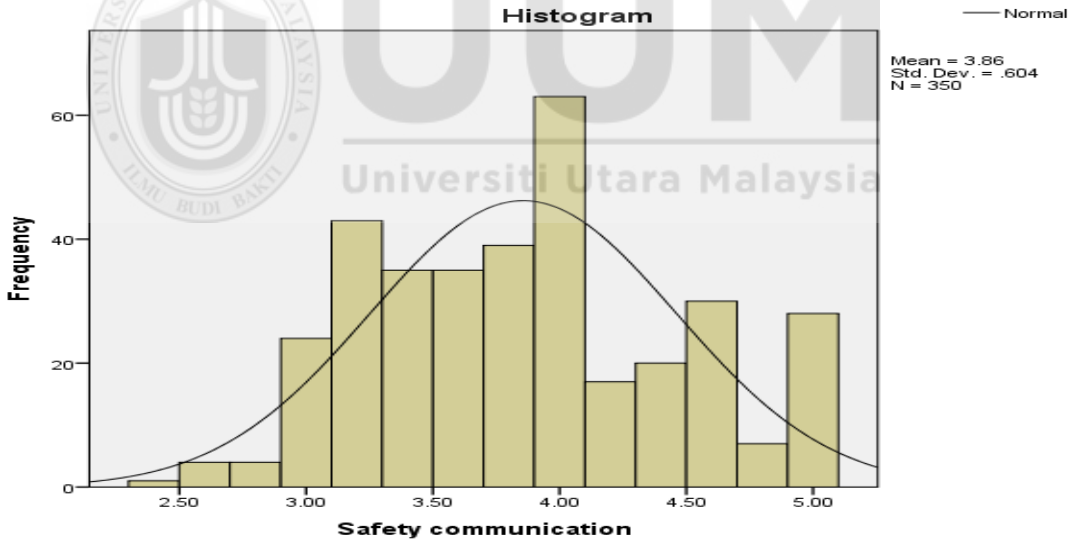


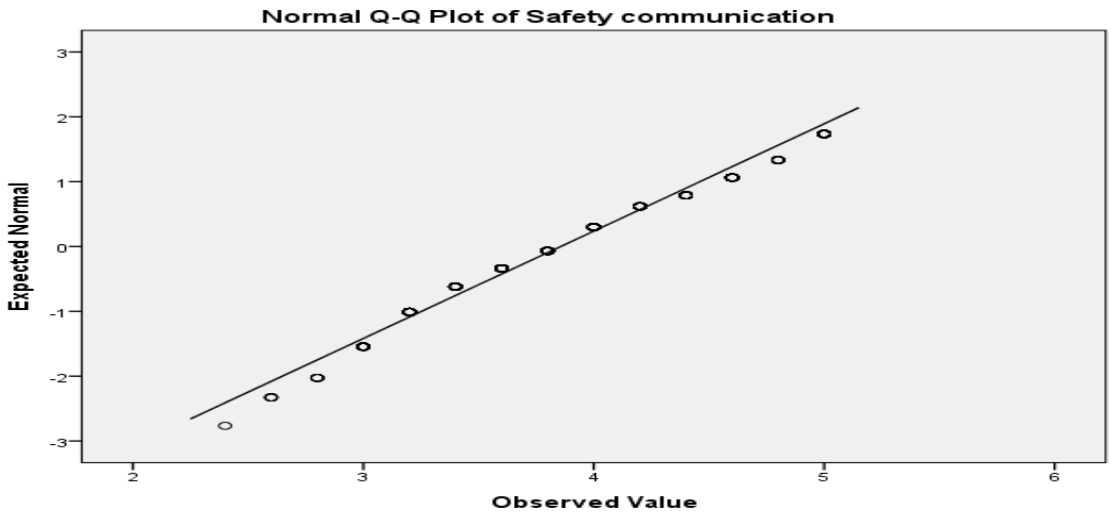
Safety training

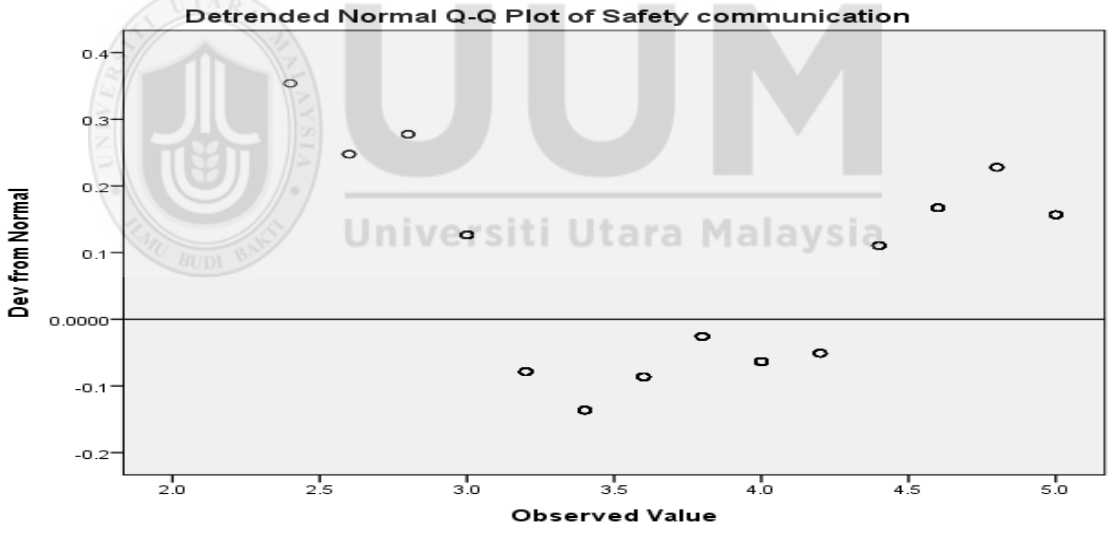


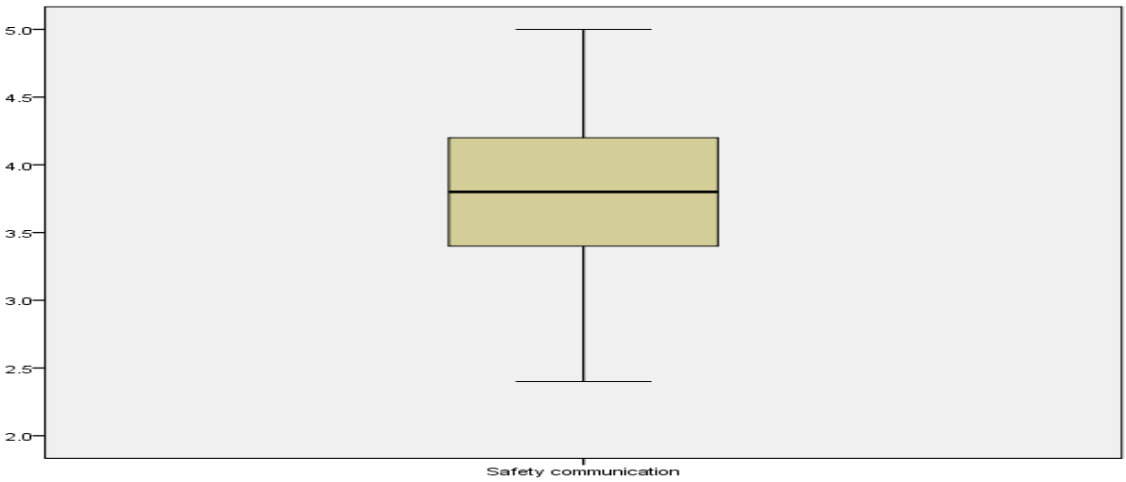


Safety communication









Appendix D

Descriptive Statistics Results

Frequency Table

B1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	21	6.0	6.0	6.0
	A	141	40.3	40.3	46.3
	SA	188	53.7	53.7	100.0
	Total	350	100.0	100.0	

B2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	21	6.0	6.0	6.0
	A	145	41.4	41.4	47.4
	SA	184	52.6	52.6	100.0
	Total	350	100.0	100.0	

B3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	23	6.6	6.6	6.6
	A	138	39.4	39.4	46.0
	SA	189	54.0	54.0	100.0
	Total	350	100.0	100.0	

B4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	1	.3	.3	.3
	N	16	4.6	4.6	4.9
	A	140	40.0	40.0	44.9
	SA	193	55.1	55.1	100.0
	Total	350	100.0	100.0	

B5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	79	22.6	22.6	22.6
	D	99	28.3	28.3	50.9
	N	58	16.6	16.6	67.4
	A	78	22.3	22.3	89.7
	SA	36	10.3	10.3	100.0
	Total	350	100.0	100.0	

B6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	96	27.4	27.4	27.4
	D	101	28.9	28.9	56.3
	N	42	12.0	12.0	68.3
	A	84	24.0	24.0	92.3
	SA	27	7.7	7.7	100.0
	Total	350	100.0	100.0	

B7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	85	24.3	24.3	24.3
	D	108	30.9	30.9	55.1
	N	60	17.1	17.1	72.3
	A	73	20.9	20.9	93.1
	SA	24	6.9	6.9	100.0
	Total	350	100.0	100.0	

C8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	2	.6	.6	.6
	N	23	6.6	6.6	7.1
	A	141	40.3	40.3	47.4
	SA	184	52.6	52.6	100.0
	Total	350	100.0	100.0	

C9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	28	8.0	8.0	8.0
	A	157	44.9	44.9	52.9
	SA	165	47.1	47.1	100.0
	Total	350	100.0	100.0	

C10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	1	.3	.3	.3
	D	2	.6	.6	.9
	N	28	8.0	8.0	8.9
	A	172	49.1	49.1	58.0
	SA	147	42.0	42.0	100.0
	Total	350	100.0	100.0	

C11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	109	31.1	31.1	31.1
	D	137	39.1	39.1	70.3
	N	30	8.6	8.6	78.9
	A	50	14.3	14.3	93.1
	SA	24	6.9	6.9	100.0
	Total	350	100.0	100.0	

C12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	17	4.9	4.9	4.9
	D	48	13.7	13.7	18.6
	N	45	12.9	12.9	31.4
	A	136	38.9	38.9	70.3
	SA	104	29.7	29.7	100.0
	Total	350	100.0	100.0	

C13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	110	31.4	31.4	31.4
	D	143	40.9	40.9	72.3
	N	43	12.3	12.3	84.6
	A	36	10.3	10.3	94.9
	SA	18	5.1	5.1	100.0
	Total	350	100.0	100.0	

C14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	39	11.1	11.1	11.1
	D	71	20.3	20.3	31.4
	N	62	17.7	17.7	49.1
	A	124	35.4	35.4	84.6
	SA	54	15.4	15.4	100.0
	Total	350	100.0	100.0	

C15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	9	2.6	2.6	2.6
	N	34	9.7	9.7	12.3
	A	161	46.0	46.0	58.3
	SA	146	41.7	41.7	100.0
	Total	350	100.0	100.0	

C16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	4	1.1	1.1	1.1
	N	36	10.3	10.3	11.4
	A	160	45.7	45.7	57.1
	SA	150	42.9	42.9	100.0
	Total	350	100.0	100.0	

D17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	1	.3	.3	.3
	N	29	8.3	8.3	8.6
	A	172	49.1	49.1	57.7
	SA	148	42.3	42.3	100.0
	Total	350	100.0	100.0	

D18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	2	.6	.6	.6
	N	22	6.3	6.3	6.9
	A	176	50.3	50.3	57.1
	SA	150	42.9	42.9	100.0
	Total	350	100.0	100.0	

D19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	26	7.4	7.4	7.4
	A	157	44.9	44.9	52.3
	SA	167	47.7	47.7	100.0
	Total	350	100.0	100.0	

D20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	87	24.9	24.9	24.9
	D	156	44.6	44.6	69.4
	N	51	14.6	14.6	84.0
	A	36	10.3	10.3	94.3
	SA	20	5.7	5.7	100.0
	Total	350	100.0	100.0	

D21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	2	.6	.6	.6
	D	2	.6	.6	1.1
	N	34	9.7	9.7	10.9
	A	188	53.7	53.7	64.6
	SA	124	35.4	35.4	100.0
	Total	350	100.0	100.0	

D22

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	2	.6	.6	.6
	N	25	7.1	7.1	7.7
	A	170	48.6	48.6	56.3
	SA	153	43.7	43.7	100.0
	Total	350	100.0	100.0	

E23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	69	19.7	19.7	19.7
	D	156	44.6	44.6	64.3
	N	60	17.1	17.1	81.4
	A	52	14.9	14.9	96.3
	SA	13	3.7	3.7	100.0
	Total	350	100.0	100.0	

E24

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	4	1.1	1.1	1.1
	D	12	3.4	3.4	4.6
	N	73	20.9	20.9	25.4
	A	171	48.9	48.9	74.3
	SA	90	25.7	25.7	100.0
	Total	350	100.0	100.0	

E25

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	2	.6	.6	.6
	N	52	14.9	14.9	15.4
	A	207	59.1	59.1	74.6
	SA	89	25.4	25.4	100.0
	Total	350	100.0	100.0	

E26

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	65	18.6	18.6	18.6
	D	154	44.0	44.0	62.6
	N	64	18.3	18.3	80.9
	A	54	15.4	15.4	96.3
	SA	13	3.7	3.7	100.0
	Total	350	100.0	100.0	

E27

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D	8	2.3	2.3	2.3
	N	61	17.4	17.4	19.7
	A	189	54.0	54.0	73.7
	SA	92	26.3	26.3	100.0
	Total	350	100.0	100.0	

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
B1	350	3	5	4.48	.609
B2	350	3	5	4.47	.608
B3	350	3	5	4.47	.618
B4	350	1	5	4.50	.614
B5	350	1	5	2.69	1.316
Rev_B5	350	1	5	3.31	1.316
B6	350	1	5	2.56	1.320
Rev_B6	350	1	5	3.44	1.320
B7	350	1	5	2.55	1.251
Rev_B7	350	1	5	3.45	1.251
Safety compliance	350	2.86	5.00	4.0159	.67695
C8	350	2	5	4.45	.644
C9	350	3	5	4.39	.632
C10	350	1	5	4.32	.669
C11	350	1	5	2.27	1.233
Rev_C11	350	1	5	3.73	1.233
C12	350	1	5	3.75	1.163
C13	350	1	5	2.17	1.134
Rev_C13	350	1	5	3.83	1.134
C14	350	1	5	3.24	1.252
Rev_C14	350	1	5	2.76	1.252

C15	350	2	5	4.27	.739
C16	350	2	5	4.30	.698
Management commitment	350	2.78	5.00	3.9787	.51247
D17	350	1	5	4.33	.650
D18	350	2	5	4.35	.624
D19	350	3	5	4.40	.625
D20	350	1	5	2.27	1.117
Rev_D20	350	1	5	3.73	1.117
D21	350	1	5	4.23	.689
D22	350	2	5	4.35	.638
Safety training	350	3.00	5.00	4.2329	.54236
E23	350	1	5	2.38	1.074
Rev_E23	350	1	5	3.62	1.074
E24	350	1	5	3.95	.840
E25	350	2	5	4.09	.647
E26	350	1	5	2.42	1.072
Rev_E26	350	1	5	3.58	1.072
E27	350	2	5	4.04	.727
Safety communication	350	2.40	5.00	3.8566	.60419
Valid N (listwise)	350				

Appendix E

Reliability Test Results

Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.827	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
B1	23.63	19.316	.517	.817
B2	23.65	19.123	.557	.813
B3	23.64	19.051	.560	.812
B4	23.61	19.424	.491	.819
Rev_B5	24.81	14.048	.677	.789
Rev_B6	24.67	13.472	.747	.773
Rev_B7	24.66	14.379	.686	.785

Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.701	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
C8	31.36	17.721	.579	.652
C9	31.42	17.745	.588	.652
C10	31.49	17.649	.565	.652
Rev_C11	32.07	16.023	.378	.679
C12	32.06	19.552	.036	.753
Rev_C13	31.98	15.467	.507	.645
Rev_C14	33.05	18.239	.137	.739
C15	31.54	17.206	.574	.646
C16	31.51	17.328	.595	.646

Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.822	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
D17	21.07	7.638	.704	.774
D18	21.04	7.514	.785	.760
D19	20.99	7.467	.800	.757
Rev_D20	21.67	7.442	.312	.900
D21	21.17	7.963	.553	.801
D22	21.04	7.669	.711	.773

Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.708	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Rev_E23	15.67	5.656	.453	.673
E24	15.34	6.499	.449	.667
E25	15.19	7.070	.476	.666
Rev_E26	15.70	5.277	.548	.625
E27	15.24	6.830	.465	.665

Appendix F

Pearson Correlation Results

Correlations

Correlations

		Safety compliance	Management commitment	Safety training	Safety communication
Safety compliance	Pearson Correlation	1	.734**	.658**	.663**
	Sig. (2-tailed)		.000	.000	.000
	N	350	350	350	350
Management commitment	Pearson Correlation	.734**	1	.794**	.744**
	Sig. (2-tailed)	.000		.000	.000
	N	350	350	350	350
Safety training	Pearson Correlation	.658**	.794**	1	.716**
	Sig. (2-tailed)	.000	.000		.000
	N	350	350	350	350
Safety communication	Pearson Correlation	.663**	.744**	.716**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	350	350	350	350

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix G

Multiple Regression Results

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Safety communication, Safety training, Management commitment[b]	.	Enter

a. Dependent Variable: Safety compliance

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.758[a]	.575	.571	.44316	1.706

a. Predictors: (Constant), Safety communication, Safety training, Management commitment

b. Dependent Variable: Safety compliance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91.980	3	30.660	156.118	.000[b]
	Residual	67.951	346	.196		
	Total	159.932	349			

a. Dependent Variable: Safety compliance

b. Predictors: (Constant), Safety communication, Safety training, Management commitment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.078	.196		-.395	.693		
	Management commitment	.616	.084	.466	7.365	.000	.307	3.261
	Safety training	.159	.076	.127	2.096	.037	.334	2.994
	Safety communication	.252	.062	.225	4.085	.000	.404	2.474

a. Dependent Variable: Safety compliance

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Management commitment	Safety training	Safety communication
1	1	3.979	1.000	.00	.00	.00	.00
	2	.012	17.847	.77	.01	.01	.24
	3	.006	26.433	.23	.15	.28	.75
	4	.003	34.700	.00	.84	.71	.02

a. Dependent Variable: Safety compliance

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.0018	5.0547	4.0159	.51338	350
Residual	-1.71857	1.23105	.00000	.44125	350
Std. Predicted Value	-1.975	2.024	.000	1.000	350
Std. Residual	-3.878	2.778	.000	.996	350

a. Dependent Variable: Safety compliance

Charts