DETERMINANTS OF EMPLOYEES' SAFETY BEHAVIOURS IN CONTAINER TERMINAL OPERATIONS IN TAIWAN

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PhD

The Hong Kong Polytechnic University

2020

The Hong Kong Polytechnic University

Department of Logistics and Maritime Studies

Determinants of Employees' Safety Behaviours in Container

Terminal Operations in Taiwan

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A thesis submitted in partial fulfilment

of the requirements for the degree of

Doctor of Philosophy

July 2019

Certificate of Originality

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Abstract

Container terminals are important interfaces between sea and land transportation. However, container terminal operations involve different types of dangerous and risky activities, such as container loading and discharging, lashing, yard operations, tallying and truck operations. Safety and accident prevention are perennial concerns of container terminal operators. Despite previous studies that have demonstrated the importance of an organisational safety climate and how it affects employees' safety behaviours in shipping and container terminal operations, it seems that a limited number of prior studies has considered the impact of leader-member exchange (LMX) on employees' safety behaviours.

Drawing on social exchange theory, *LMX* refers to the reciprocal exchanges between a leader and a member built on obligations, respect, and trust. This thesis proposes that the relationship between employees and supervisors and safety climate will affect employee's organisational citizenship behaviour (OCB) and safety behaviour in container terminal operations. In addition, this study considers individual factors such as emotional intelligence (EI) and job stress in the model of determinants of safety behaviour. Hence, the objective of this study is to examine the relationships between LMX, safety climate, emotional intelligence, job stress, OCB, and safety behaviour in the context of container terminal operations. Exploratory and confirmatory approaches using a structural equation modelling were conducted. Data were collected from a survey of 324 employees of container terminal operators in Taiwan. The research findings indicate that LMX and OCB positively affected employees' safety behaviour, whereas LMX also had a positive influence on OCB. In addition, results indicated that safety climate positively affected LMX and EI, whereas job stress negatively affected

employees' safety behaviour. Specifically, this research evidence of the mediating effects of LMX, EI, OCB, and job stress on the relationships between safety climate and employees' behaviours in container terminal operator.

This study has a certain guiding significance for safety research and LMX theory and practice. First, this study emphasizes the importance of LMX, safety climate, emotional intelligence and job stress to employees' OCB and safety behaviors. Second, the results demonstrate the value of LMX, which has been found to be positively correlated with the safety climate. Third, this study reveals that safety climate plays an important impact on employees' OCB, which terminal operators should regard.

Keywords: Container terminal, Leader-member exchange, Safety climate, Organizational citizenship behaviour, Job stress, Emotional intelligence, Safety behaviour.

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CHAPTER 1: INTRODUCTION

1.1 Research Background and Motivation

Seaport plays a crucial role in international trade and a key node in global supply chains (Al-Eraqi *et al.*, 2009; Cheng *et al.*, 2010; Dias *et al.*, 2009; Lun and Cariou, 2009; Stahlbock and Voβ, 2010; Wu and Liang, 2009). More than 80 per cent of global merchandise trade in terms of volume is handled by ports (UNCTAD, 2018). Global ports make an enormous contribution to the development of economy and trade (Dwarakish and Salim, 2015; IMO, 2019; UNCTAD, 2018). Global container port throughput reached 752 million TEUs, and significantly increased in volume of about 6 per cent in 2017, up from 2.1 per cent in 2016 (UNCTAD, 2018). However, container terminals can be dangerous, with several serious accidents having occurred in recent years. For example, a series of explosions at the Port of Tianjin's container freight station killed 173 people and injured hundreds more on 12 August 2015. According to the Port Industry Accident Statistics (Port Skills and Safety Limit, 2017)—an annual summery of port industry accidents in the United Kingdom—60 per cent of injuries occurred in five areas: berths/quays, ships/crafts, open storage areas, and cargo handling equipment.

Resulting in thousands of fatalities and lost vessels, maritime accidents generate billions of dollars in insurance claims per year (Talley *et al.*, 2006; Talley *et al.*, 2008; The UK P and I Club, 2015). Table 1-1 indicates that there were approximately 1,129 shipping total losses between 2008 and 2017 (AGCS, 2018). There are five major causes of shipping losses: foundering, wrecked/stranded

ships, fire/explosion, collision, and machinery damage/failure. Moreover, there were 2,712 shipping casualties (incidents) in 2017, a slight increase of 3 per cent over the previous year.

Table 1-1 The Main Causes of Total Loss in Shipping between 2008-2017

Causes	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Foundered (Sunk, submerged)	73	61	64	45	55	70	50	66	48	61	593
Wrecked/stranded (ground)	34	23	24	29	27	21	18	20	20	13	229
Fire/Explosion	16	14	12	9	13	15	6	9	12	6	112
Machinery Damage/Failure	8	7	4	6	15	2	5	2	10	8	67
Collision	13	13	10	3	5	2	2	7	1	1	57
Hull Damage (holed, cracks, etc.)	4	8	4	3	7	1	5	2	4	5	43
Miscellaneous	1	2	6	1	1	1	2		1		15
Contact	1	1			2		1				5
Missing/Overdue	1		1						2		4
Piracy		1	2	1							4
Grand Total	151	130	127	97	125	112	89	106	98	94	1,129

Source: Allianz Global Corporate and Specialty (AGCS, 2018)

Several studies have focused on the cause of accidents or harms; however, the reason is not always clear. One of the important assumptions has been noted that employees' attitudes and safety behaviours may well increase or decrease the occurrence of accidents (Griffin, and Neal, 2000; Lu and Shang, 2005). A rising number of studies have explored the importance of safety climate and its impact on employee's safety behaviours (Cooper and Phillips, 2004; Diaz, and Cabrera, 1997; Griffin, and Neal, 2000; Lu and Tsai, 2010; Lu, and Yang, 2011). Nevertheless, employees' safety behaviours was affected not only by safety climate but by working with supervisors (Hofmann and Morgeson, 1999; Kath *et al.*, 2010), individual psychological perceptions such as emotional intelligence (Carmeli and Josman, 2006; Jung and Yoon, 2012; Law and Song, 2016; Lu and Kuo, 2016), job stress (Lu and Kuo, 2016; Rundmo, 1995; Safaria *et al.*, 2010), and organizational citizenship behaviour (OCB) (Fruhen *et al.*, 2014; Hofmann *et*

al., 2003; Lu *et al.*, 2017; Luria and Rafiaeli, 2008, Wei *et al.*, 2015).

The concept of leader-member exchange (LMX) provides a theoretical basis for explaining the cooperative relationship between employees and supervisors. According to the social exchange theory (Blau, 1964), leader-member exchange (LMX) refers to the reciprocal exchange between leaders and members based on obligations, respect and trust (Graen and Uhl-Bien, 1995). In the concept of LMX, leaders establish various types of exchange relationships with their employees. Consequently, the quality of these relationships affects not only employees' attitude and behaviour but also leaders (Illies *et al.*, 2007). The leader initiates social exchange through the favourable treatment of a member. This results in the member feeling obliged to reciprocate by working harder, thus benefitting the leader (Liden *et al.*, 1997; Rockstuhl *et al.*, 2012). Prior studies have also shown that LMX had a positive influence on organisational citizenship behaviour (Graen and Uhl-Bien, 1995; Illies *et al.*, 2007; Wang *et al.*, 2005).

Safety climate can be defined as a series of consistent expectations and views of employees on organizational safety (Zohar, 1980b). Many previous studies have shown that a safety climate can explain safety-related outcomes in firm, such as employees' safety behavior or industrial accident. For example, Lu and Shang (2005) determined the safety climate based on seven dimensions, supervisor safety, job safety, co-worker's safety, safety management, safety training, safety rules, and job pressure. Their research found that safety training and management-oriented terminal operators could improve firms' safety performance. Moreover, safety climate plays an influential factor on LMX relationships and safety behaviour (Hofmann *et al.*, 2003).

However, several researchers have found that the influence of emotional

intelligence on individual behaviour (Carmeli, 2006; Côté and Miners, 2006; Day and Carroll, 2004; Downey *et al.*, 2008; Groves *et al.*, 2008; Jung and Yoon, 2012; Siu, 2009). For example, Groves *et al.* (2008) analysed the impact of emotional intelligence on individual behaviour with a sample of business students from an American university. Their finding suggests that emotional intelligence can be developed by training and influencing individual behaviours. Meanwhile, Goleman (1998) and Joseph and Newman (2010) demonstrate that high levels of emotional intelligence were correlated with operational results and organisational success, respectively. Day and Carroll (2004) investigates the relationship between emotional intelligence and individual performance. Jung and Yoon (2012) were investigated the emotional intelligence and work behaviour of employees in a deluxe hotel in South Korea. They found that the use of emotion and self-emotion appraisal have a positive influence on organisational work behaviour (Jung and Yoon, 2012). Therefore, individuals with high degree of emotional intelligence are able to management their emotions, behaviour and improve their operational safety behaviour.

Several studies find that job stress also affect individual performance or safety behaviour (Adebayo and Ogunsina, 2011; Ford and Bagot, 1978; Leung *et al.*, 2012; Lu and Kuo, 2016; Rundmo, 1995; Safaria *et al.,* 2010; Tsaur and Tang, 2012). Adebayo and Ogunsina (2011) studied the influence of job stress on the behaviour of Nigeria police, and found that lower job stress could reduce the employees' error. Leung *et al.* (2012) investigated employees' injury by management of personal stress and organisational stressors. The result suggests that emotional stress is a key factor in safety behaviours (Leung *et al.,* 2012). Safaria *et al.* (2010) also show that lower stress results in optimised safety

behaviour.

In particular, another variable that contributes to safety behavior or performance is the effect of employee organizational citizenship behavior (OCB). OCB refers to the behavior of an employee that exceeds his or her defined job duties (Ilies *et al.*, 2007).Employees with high levels of civic behavior are likely to be channels of return because their behavior is unrestricted and can be identified by the job description or organizational system of any individual behavior. In the past few years, more and more attention has been paid to the relationship between OCB and task performance (Carmeli and Josman, 2006) and the relationship between LMX and OCB. However, relatively little research examined the relationship between OCB and individual safety behavior. As the interest in OCB and LMX in the workplace has aroused and emphasized, we believe that a comprehensive model is needed to address the premises of OCB and the multiple aspects of its impact on safe behavior.

Specifically, this study employs social exchange theory (Blau, 1964) to explain the relationships between safety climate, leader-member exchange, organizational citizenship behaviour, and safety behaviour. Organization-based social exchanges may pay little attention to safety issues. According to social exchange theory (Blau, 1964) when one-part acts in favour of the other, the implicit obligation of future reciprocity arises (Gouldner, 1960). This implicit obligation leads to certain actions designed to benefit the initiating party. This implied obligation leads to certain actions designed to benefit the originating party. These concepts studied in the field of safety foresee how social exchange can help explain some of the observed relationships. Zohar (1980b) noted that management's commitment to safety "is a significant issue influencing the success

of safety programs in the industry," which might be reflected through occupational training programs, management's participation in safety committees, and consideration of safety in job design. Zohar also believes that these management behaviours affect employees' perceptions of safety-related behaviours, which can also be viewed from a social exchange perspective as well. In fact, Hofmann and Stetzer (1996) found that positive safety climates were correlated with safety-related behaviours.

This conceptualization of social exchanges between and among organizational members has been used as the foundation for many different fields of research in organizational sciences. Konovsky and Pugh (1994) and Moorman (1991) proposed that implied obligations generated through social exchanges could be rewarded through employee citizenship behaviours. Tsui *et al.* (1997) believe that investment-oriented human resource practices would let to employees' vague perception of obligations. Also, social exchange has been used to describe the relationships between individuals and their leaders (Liden *et al.*, 1993; Settoon *et al.,* 1996) as well as with the larger organization (Eisenberger *et al.*, 1990; Eisenberger *et al.*, 1986; Settoon *et al.,* 1996).

The social exchange theory has increasingly used as a conceptual basis for organizational sciences, researchers have not yet linked it to safety-related outcomes. To address this deficit, the study investigated the relationships between two forms of social exchange – leader-member exchange (LMX) and safety climate and the willingness of employees to improve safety issue, after their safety behaviours were subject to safety procedures, safety practices, and the occurrence of accidents to following accepted safety procedures and practices.

Although the concepts such as safety climate, leader-member exchange (LMX), emotional intelligence, job stress, and organizational citizenship behavior

have been widely discussed in safety-related studies, few previous studies have used comprehensive models to explain workers' or employees' safety behaviors. Therefore, this study aims to explain the relationship between LMX, safety climate, OCB, emotional intelligence, job stress and safety behaviors in the operating environment of container terminals.

More specifically, this study shows the necessity for co-operation between safety climate and social exchange relationships between supervisors and employees to optimise organisational citizenship behaviour and workplace safety. This study posits the following four research questions:

(1) What are the employees' perceptions of LMX, safety climate, job stress, emotional intelligence, organisational citizenship behaviour, and supervisors' perceptions of employees' safety behaviour in the context of container terminal operators?

(2) How do LMX quality, safety climate, OCB, and job stress impact employee safety behaviour in the context of container terminal operations?

(3) What are the linkages between LMX, safety climate, OCB, emotional intelligence, job stress, and safety behaviour in the context of container terminal operations?

(4) How does safety climate impact employee safety behaviour in container terminal operations when mediated by LMX, OCB, emotional intelligence, and job stress?

1.2 Objectives of the Study

This study examines the effects of LMX, safety climate, OCB, job stress, and emotional intelligence on employee safety behaviour in the context of container terminal operations. Reflecting the research questions, this study's research

objectives can be summarised as follows:

(1) Understand employees' perceptions of LMX, safety climate, OCB, job stress, and emotional intelligence on supervisors' safety behaviour in the context of container terminal operations.

(2) Examine the effects of LMX quality, safety climate, OCB, and job stress on employee safety behaviour in the context of container terminal operations.

(3) Develop a model explaining the relationships between LMX, safety climate, OCB, emotional intelligence, job stress, and safety behaviour in the context of container terminal operations.

(4) Examine the mediating effects of LMX, OCB, emotional intelligence, and job stress on the relationship between safety climate and employee safety behaviour in the context of container terminal operations.

1.3 The Scope of the Study

The purpose of this study is to empirically examine the relationships between LMX, safety climate, OCB, job stress, emotional intelligence, and employees' safety behaviour. Considering the limitation of time and cost, this study only investigation container terminal operators in Taiwan. Container terminal operators include container freight station, container stevedoring companies, dedicated container terminal operator, maintenance and repair unit, and warehouse at container terminal.

1.4 Organisation of the Study

This study is organised in six chapters. This first chapter introduces the motivations, objectives, scope, and organisation of this study. The second chapter reviews the existing literature on LMX, safety climate, OCB, emotional

intelligence, job stress, and employee safety behaviours. This literature review provides the groundwork for the development of and justification for the conceptual model of these variables. The third chapter addresses this study's methodology, including the conceptual model, research hypotheses, analytical steps, questionnaire design and measure, validity and reliability test, and sampling technique. The fourth chapter presents the general results of the initial analysis of the questionnaire data in a descriptive manner. The fifth chapter presents the empirical results and analyses, including the linkages between LMX, safety climate, OCB, emotion intelligence, job stress, and employee safety behaviours, as well as the mediating effects of LMX, OCB, emotional intelligence, and job stress on the relationship between safety climate and employee safety behaviour. The final chapter discusses the implications of these findings, as well as this study's conclusions, limitations, and suggestions for future research.

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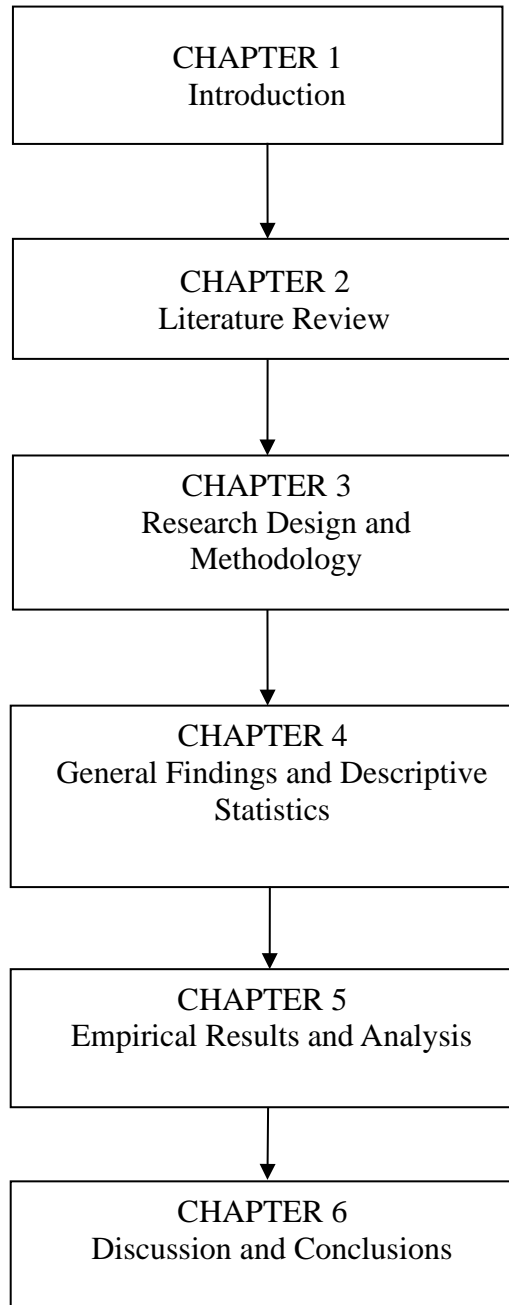
Figure 1-1 Organization of the Study

CHAPTER 2: LITERATURE REVIEW

This chapter reviews the literature supporting the premise for this research and comprises seven sections. The first and second sections review the literature on social exchange theory (SET) and leader–member exchange (LMX) theory, providing a theoretical background for our LMX concepts. The third and fourth sections discuss citizenship behaviour and safety climates. The fifth section discusses safety behaviour based on relevant literature about the relationships between LMX, organizational citizenship behaviour (OCB), safety climate, emotional intelligence (EI), job stress and employee safety behaviour. The sixth section discusses EI and the sixth provides an overview of safety behaviour. The final section provides a chapter summary.

2.1 Social Exchange Theory

Blau (1964) explained SET across the spectrum of individual to social levels. SET establishes that all human behaviour are dominated by exchange activities that bring rewards and protection. Thus, under SET, the social relationships formed by humans are exchange-based relationships. Understanding SET is critical to understanding LMX. The roots of SET can be traced back to the 1920s (Malinowski, 1922; Mauss, 1925). It has been used to bridge anthropology (Firth, 1969; Sahlins, 1972), social psychology (Gouldner, 1960; Homans, 1958; Thibaut and Kelley, 1959) and sociology (Blau, 1964). Although various views have emerged, social exchange involves a series of interactions that generate obligations (Emerson, 1976) and payouts.

Blau (1964) created a simple definition of the exchange frame of reference, limiting it to actions that were contingent on rewarding reactions from others.

Social exchanges entail unspecified obligations, such that, when one person performs a favor for another, there is an expectation of some future return (Gouldner, 1960). Exchanges between an employee and a firm are considered perceived organizational support obligations (Eisenberger *et al.*, 1986). LMX requires exchanges between an employee and management (Graen and Scandura, 1987).

Over time, the implicit obligation generated by SET leads to behaviour designed to benefit the initiating party. This appears to also apply to the field of safety. Considering the foundational arguments for a safety climate, the SET perspective seems relevant. Zohar (1980a) pointed out that management's commitment to safety was a major factor affecting the success of safety programmer in the industry, which, in turn, was reflected in occupational training programmer, management participation in safety committees and the consideration of safety factors in job design. Zhou and Jiang (2015) defined SET, explaining that people would sense an obligation to reciprocate when they received well-intended treatments from social interactions. Thus, Zohar (1980b) believed that management behaviour could influence employee perceptions of an organizational safety climate.

2.2 Leader-Member Exchange Theory

LMX theory depends upon a relationship-based approach to leadership, focusing on the dyadic link between leaders and employees. LMX theory suggests that leaders develop reciprocal relationships with their employees, the quality of which influences employees' responsibilities, decisions, access to resources and performance. Based on trust and respect, such relationships are often emotional and extend beyond the scope of employment. The value of LMX has been widely

emphasized by managers and researchers (Ilies *et al.*, 2007; Liden *et al.*, 1997).

2.2.1   Definition of leader-member exchange

Schriesheim (1999a) noted that the definition of LMX and its subdimensions had evolved over time. The earliest LMX studies were exploratory in nature and did not provide much detail about theory or dimensionality. LMX reflects the quality of the exchange between leader and subordinate (Liden and Graen, 1980). In this regard, several subdimensions have been developed (Graen *et al.*, 1972; Dansereau *et al.*, 1973; Graen *et al.*, 1973). For example, Dansereau *et al.* (1975) and Graen and Cashman (1975) constructed LMX measures to address different leadership styles necessary to form relationships with individual subordinates based on their different needs, attitudes and personalities. LMX suggests that leaders and subordinates develop unique dyadic relationships over time as they influence each other and negotiate their roles through ongoing interactions (Dansereau *et al.*, 1975). Graen (1976) proposed that LMX was an exchange relationship based on competence, interpersonal skill and trust. Cashman *et al.* (1976) also explained that it was an exchange relationship based on attention and sensitivity.

Schriesheim (1999b) proposed several dimensions for LMX, including trust, ability, motivation, help, support, understanding, latitude, authority, information, influence in decision-making, communications, confidence, consideration, talent, authorization, innovation, expertise, control of organizational resources and mutual control. Dienesch and Liden (1986) developed a 3-dimensional LMX model that included mutual effects, contributions and loyalty. Graen and Scandura (1987) proposed two dimensions: quality and coupling. In these respects, individual attitudes emerged in the exchange relationship, including degrees of

loyalty, support and trust between dyadic members. The coupling dimension was more behaviour-oriented, involving influence, delegation, latitude and innovation. According to Scandura *et al.* (1986), LMX was a system of components and relationships involving interdependent patterns of behaviour that share mutual outcomes and generate concepts of the environment, causalities and value. Michael *et al.* (2006) revealed that a positive LMX relationship could be assumed to apply to different outcomes, such as safety, productivity, quality, etc.

2.2.2 *Extant studies on leader-member exchange*

Numerous studies have explored LMX. Galvin *et al.* (2010) explained how charismatic perceptions of leaders spread through third-party individuals, proposing a mediated model that considers how individuals engage in surrogate behaviour that increase charismatic perceptions among distant followers. The study described crucial and powerful influences of such leaders on the organization and the corresponding follower perceptions.

Anand *et al.* (2010) investigated idiosyncratic deals (i.e. i-deals): special arrangements that link i-deals and OCBs. From the perspective of SET, the relationship between an individual's i-deals and OCB should depend on the quality of workplace relationships with their supervisors, colleagues and organizations. The results of Anand *et al.* (2010) found a stronger positive relation between i-deals and OCBs for employees having high LMX or team-member exchange.

Stobbeleir *et al.* (2011) examined how employees used a particular type of proactive behaviour (i.e. feedback seeking) as a strategy to enhance their creative performance. The result showed that individuals could enhance their creative performance by actively seeking feedback from different sources. Thus, their findings highlighted the importance of studying employees' self-regulating

behaviour during the innovation process. Moreover, the results supported the idea that feedback seeking was not only a strategy that promoted individual adaptation, it also helped individuals obtain creative outcomes.

Zhang *et al.* (2012) analyzed the LMX quality of the consistent effect between leaders and employees, determining factors affecting employees' job satisfaction, emotional commitment and job performance. The results showed that high-quality binary exchange relationships and positive working results were key to maintaining consistency between leaders and followers. Organizations benefit by matching leaders and employees based on active individual personalities, which many organizations believe is key to innovation and sustainable competitive advantage.

Toegel *et al.* (2013) found that, although managers were active in providing emotional help, they perceived the provision of such support as beyond the scope of their managerial duties. In contrast, employees defined emotional support as managerial in-role behaviour. Their results demonstrated an emergent understanding of discrepant interpretations in the workplace. Although employees perceived well-being support or care as part of the manager's role not requiring reciprocation, managers saw such support as discretionary extra-role behaviour that require reciprocated commitments. Discrepant expectations concerning emotional support has resulted in both positive and negative outcomes (Toegel *et al.,* 2013).

Zhang *et al.* (2015) studied paradoxical leader behaviour and addressed effective organizational leadership practices, providing five dimensions to measure the behaviour: self-centeredness vs. other centeredness; keep-distance vs. closeness; treating subordinates uniformly vs. individualization; work requirements vs. flexibility; and control vs. autonomy (Zhang *et al.*, 2012).

2.3   Safety Climate Theory

Psychological climate refers to an individual's perception of the work environment (James and James, 1989). When these perceptions are shared by members of a group or organization, they comprise a group or organizational climate. Several aspects of the work environment can be assessed through climate surveys, including those of organizational policies, procedures and practices (Reichers and Schneider, 1990). Specific types of climate reflect the perceptions of various aspects of the work environment, including service (Schneider *et al.*, 1998), innovation (Anderson and West, 1998) and safety (Neal *et al.,* 2000). Thus, a perceived safety climate is an individual's perception of policies, procedures and practices related to workplace safety (Neal and Griffin., 2006). Group safety climate refers to the common perception of the entire group. Researchers can use a direct consensus model (Chan, 1998) to implement a group safety climate by aggregating individual perceptions at the group level.

2.3.1   Definition of safety climate

The safety climate reflects employees' perceptions of safety practices, policies and procedures, which are implemented and prioritized within the organization (Barling *et al.*, 2002; Glendon and Literland, 2001; Gillen *et al.*, 2002; Huang, *et al*., 2010). Safety climate is regarded as a sub-component of a safety culture (ACSNI, 1993; Glendon and Stanton, 2000; Neal *et al.*, 2000; Silva *et al.*, 2004). Reason, *et al*., (1998) and Sorensen (2002) pointed out that the performance of people, management and organizations was closely related to the safety climate. A positive safety climate is the key to improving safety in organizations having risks of major accidents (Huang *et al.*, 2010; Navon *et al.*, 2005; Siu *et al.*, 2004).

Several researchers (Cooper and Phillips, 2004; Coyle *et al.*, 1995; Zohar,

1980a) defined the safety climate as a system of proactive safety measures implemented by all members. This model can be construed to manifest shared safety perceptions, beliefs, structures, policies, strategies, goals, practices and leadership styles (Brown and Holmes, 1986; Niskanen, 1994). There are three general indicators of an organization's safety climate: manager commitment; safety policies and procedures; and employee involvement (Dufort and Infante-Rivard, 1998; FernandezMuniz et al., 2007; Zimolong and Elke, 2006).

When individual safety attitudes are built and sustained and safety behaviour are promoted, a beneficial safety climate generally forms (Zohar, 1980b). Cox and Flin (1998a) believed that safety behaviour was the expression of the organization's safety climate that expresses the attitude of employees in the organization. Clark (2006) studied the relationship among safety climate, safety performance, (i.e. participation and compliance), occupational accidents and injuries based on meta-analysis. The results showed that organizational safety climate had a positive and significant effect on employee safety compliance and participation. Therefore, the operational definition of the safety climate in the environment of container operators refers to employee views on organizational policies, management systems and practices related to the safety of container terminals in the organization (Lu et al., 2017).

Extant safety climate studies can be divided into four categories (Cooper and Phillips, 2004). The first includes studies that attempted to design psychometric instruments to determine the underlying factor structure (Brown and Holmes, 1986; Coyle et al., 1995; Dedobbeleer and Beland, 1991; Garavan and Obrien, 2001). The second includes studies of constructing and testing theoretical models of safety climates to identify the determinants of safety behaviour and accidents (Cheyne et al., 1998; Neal et al., 2000; Prussia, et al., 2003; Thompson et al.,

1998). The second tested the relationship between safety climate perception and actual safety performance (Glendon and Litherland, 2001). The fourth explored the relationship between safety and organizational climates (Neal *et al.*, 2000; Silva *et al.*, 2004).

2.3.2   Extant maritime studies on safety climate

Lu and Shang (2005) evaluated the crucial dimensions of safety climates from a container terminal operator's perspective at the Port of Kaohsiung. Their study identified seven safety climate dimensions for factor analysis: supervisor safety; job safety; coworker safety; safety management; safety training; safety rules with special safety training; and job pressure. Using cluster analysis, Lu and Shang (2005) categorized respondents into four groups: safety management-oriented terminal operators; safety training and management-oriented terminal operators; job safety and supervisor safety-oriented terminal operators; and coworker safety-oriented terminal operators. The results indicated that safety training and management-oriented terminal operators displayed the best safety performance, followed by safety management-oriented terminal operators, job safety and supervisor safety-oriented terminal operators and coworker safety-oriented operators.

In a further study, Shang and Lu (2009) used structural equation modelling (SEM) to study the impact of the safety climate on the perception of safety performance of employees at the container terminal at Kaohsiung Port, Taiwan. In doing so, they identified three key safety climate dimensions: supervisor safety behaviour management; safety training programmers; and colleague safety behaviour. There was a positive and significant relationship between the three safety climate dimensions. Their research results showed that the management of

container terminals could improve the safety environment of these companies by focusing on the safety behaviour of managers, safety trainers and colleagues to reduce the occurrence of injuries and accidents.

In a further study, Shang and Lu (2009) examined the effects of safety climate on container operation terminal employee perceptions of safety performance in Taiwan's Kaohsiung Port using the SEM technique. Doing so, they identified three critical safety climate dimensions: supervisor safety behaviour management; safety training programmers; and coworker safety behaviour. These three safety climate dimensions had positive and significant relationships with one another. Their results suggested that the management of container operation terminals could enhance and refine the safety climate of these firms by focusing on managerial safety behaviour, safety training programmer and coworker safety behaviour, thereby reducing the occurrence of injuries and accidents.

2.4 Organizational Citizenship Behaviour

OCB refers to an individual's voluntary commitment within an organization or company apart from their contractual tasks. Studied since the late 1970s, OCB has grown substantially over the past three decades. Because organizational behaviour has been linked to overall organizational effectiveness, these types of employee behaviour have had important consequences for the workplace.

2.4.1 *Definition of organizational citizenship behaviour*

Organ (1988) defined OCB as individual behaviour, freely determined, not directly or explicitly recognized by the formal reward system, which generally promotes the effective operation of the organization. This definition includes three key aspects central to its structure. First, OCB comprises arbitrary behaviour that do not fall within job descriptions and is the result of individual employee choices.

Second, OCB exceeds the executable requirements of the job. Finally, OCB contributes positively to the overall efficiency of the organization. The definition of Organ (1988) for OCB aroused significant criticism, especially when the nature of the concept makes it difficult to operationally define. Critics questioned whether citizenship defined by organizations is discretionary. In response, Organ (1997) pointed out that, because jobs first defined OCB, they have changed. More specifically, he noted that jobs evolved from a clearly defined set of tasks and responsibilities into a more ambiguous role. Without a clear role, it quickly became difficult to determine what discretion was.

2.4.2 Extant studies on organizational citizenship behaviour

Organ (1988) identified five dimensions of OCB: altruism; conscientiousness; sportsmanship; courtesy; and civic virtue. These five dimensions covered organizational behaviour such as helping coworkers, following company rules, not complaining and actively participating in organizational affairs. This section explores these dimensions and the related literature in greater detail.

Simply defined, altruism refers to helping others or general helpfulness (Organ, 1997). Within an organizational setting, altruism refers to helping other members of the organization with their tasks, such as by voluntarily assisting new employees, aiding overloaded coworkers, backing up absent workers and guiding employees to accomplish difficult tasks. Smith *et al*. (1983) defined altruism as voluntary behaviour from which an employee can help an individual with a particular problem to complete their tasks under unusual circumstances. Podsakoff *et al.* (2000) demonstrated that altruism was significantly related to performance evaluations and corresponding positive affectivity.

2.5 Job Stress

Long-term job stress can affect safety behaviour and increase the risk of injury in the workplace (Larsson *et al.*, 2008; Lu and Tsai, 2010; Lu and Yang, 2011). Literature strongly suggests that job stress can adversely impact employees' work practices (Pettegrew *et al.*, 1981). Stress refers to any condition that causes an individual to have a general psychophysiological response that deviates from equilibrium (Rehman *et al.*, 2010). Job stress has been defined as an individual's physical and emotional response to a harmful or threatening workplace condition (Adaramola, 2012; Jamal, 2007). Devereux *et al.* (2004) found that organizational behaviour and the work environment increased employees' job stress and affected their physical and mental health. Sources of job stress have been discussed in previous studies (Cummins, 1990; Robbins and Judge, 2007; Wells, 1982).

According to Robbins (2007), stress could be environmental, organizational or individual. Cummins (1990) identified that sources of job stress included role conflicts, ambiguity, underutilization of skills, work overload, lack of participation and resource inadequacy. Wells (1982) pointed out that job stress could be assessed by job quality (e.g. a sense of accomplishment and self-esteem), general well-being (e.g. personal life and daily emotions) and physical health outcomes (e.g. peptic ulcers and headaches). As previously indicated, job stress is an important factor affecting individual behaviour (Adebayo and Ogunsina, 2011; Ford and Bagot, 1978; Leung *et al.*, 2012; Rundmo, 1995; Safaria *et al.*, 2010; Tsaur and Tang, 2012). Adebayo and Ogunsina (2011) examined the influence of job stress on the behaviour of Nigerian police officers and found that lower job stress reduced frequent errors. Leung *et al.* (2012) investigated worker injuries by managing personal and organizational stress. Their research showed that emotional stress was the key factor affecting safety behaviour. Safaria *et al.* (2010)

examined the relationship between job insecurity and job stress among Japanese academic staff and found that lower stress tended to encourage optimized safety behaviour.

2.5.1 Definition of job stress

LePine *et al.* (2016) conceptually distinguished demands, challenges and impeding stressors. According to the transaction stress theory (Lazarus and Folkman, 1984), needs and events should be considered in terms of their importance to the individual, because the way one understands an event can affect emotional and behavioral responses. Therefore, challenge stress refers to the existence of challenge needs, whereas challenge evaluation refers to a person's subjective interpretation of these needs, including potential personal benefits, growth, development and happiness. Challenge assessment is more likely to occur when the time and effort invested in a demanding environment is rewarded (Crawford *et al.*, 2010; Lazarus and Folkman, 1984), characterized by the need and potential for personal growth and reward that can trigger challenging stress. Additionally, stressors of disorder refer to the existing needs of disorder, whereas the evaluation of disorder refers to the subjective interpretation of individuals' needs that can lead to personal loss, restraint or injury. Assessments are more likely to occur when it is difficult to determine whether the time and effort invested will pay off. Thus, barrier stress, characterized by a lack of demand for potential growth and returns, or perhaps actually inhibiting growth or returns, can trigger obstacle assessments. Confirmatory studies have shown that stimulating pressures are generally perceived as challenging, whereas obstructive pressures are generally be perceived as impedances (Cavanaugh *et al.*, 2000; LePine *et al.*, 2005).

2.5.2 Extant studies on job stress

Based on the transactional theory of stress, LePine *et al.* (2016) defined *stress* as a process which initiated when demands in the environment increase or exceed an individual's resources (Lazarus and Folkman, 1984).These needs were then assessed to be independent of opportunities or barriers to personal growth, development, and well-being (Lazarus and Folkman, 1984). In the primary assessment, the response to the assessment depends on whether action can be taken to improve the stress situation through various coping mechanisms.

Cavanaugh *et al.* (2000), based on extending Lazarus and Folkman's stress theory, proposed a challenge–hindrance stressor framework to explain the relationship between differential stressor and outcomes. In this framework, *challenge stressors* are job demands with personal growth and rewards (Cavanaugh *et al.*, 2000; Crawford *et al.*, 2010; LePine *et al.*, 2005). Job demands that have been identified as such include workload, time pressure, job complexity, and responsibility (LePine *et al.*, 2005; Webster *et al.*, 2011; Zhang *et al*., 2015). *Hindrance stressors* are job demands that do not present the potential for personal growth and rewards and may actually hinder growth or gains (Cavanaugh *et al.*, 2000; Crawford *et al.*, 2010; LePine *et al.*, 2005). Job demands that have been identified as such include administrative hassles, role ambiguity, role conflict, resource inadequacies, interpersonal conflict, and organisational politics (LePine *et al.*, 2005; Webster *et al.*, 2013; Zhang *et al.*, 2014).

2.6 Emotional Intelligence

Salovey and Mayer (1990) defined EI as the ability to monitor one's own and others' feeling and emotions, to discriminate among them and to use this information to guide one's thinking and action. Various assessments have recently emerged to measure EI. Most tests tend to fall into one of two categories: self-

report or ability tests (Berrocal and Extrmera, 2006; Dhani and Sharma, 2016). Self-report tests are the most common means of assessing individual EI. Some of the measures used for the mental health profession included Bar–On's Emotional Quotient Inventory, the Mayer Salovey Caruso EI Test and Emotional and Social Competence Inventory (Bar–On, 2016; Berrocal and Extrmera, 2006).

2.6.1 Definition of Emotional Intelligence

Psychology and management scholars have long been interested in the study of human emotions. Salovey and Mayer (1990) were among the first scholars who proposed EI. They believed that EI referred to one's ability to deal with one's own emotions and provided one of the earliest definitions for the concept. Despite this early definition, confusion persisted about the exact meaning and domain of EI. In the early stages of this construct's development, researchers defined EI slightly differently, leading to changes in the domain of this construct. As Mayer *et al.* (2000) pointed out, some alternative concepts of EI included not only emotion and intelligence, but also motivation, incapacity tendencies, characteristics and overall individual and social functions. The Bar–on Emotional Quotient Inventory scale (Bar-on *et al.*, 2000) is a famous EI scale belonging to this category.

This study adopts the 4-dimensional definition of EI proposed by Davies *et al.* (1998) about self-emotional evaluation and expression. This dimension relates to a person's ability to understand their emotions and express them naturally. People who are good at this are better able to sense and acknowledge their emotions than most. They can also evaluate and identify the emotions of others. This dimension relates to a person's ability to perceive and understand the emotions of those around them. Those who master this ability are highly sensitive to the emotions of others and can predict emotional reactions and regulate moods.

This dimension relates to an individual's ability to control their emotions and recover quickly from psychological distress. Those who are proficient in this area can return to their normal state of mind more quickly after feeling the high or low. Because these people are better at controlling their emotions, they are less likely to lose their temper. Thus, emotions can be used to boost performance. This aspect involves the ability of individuals to use their emotions to actively guide their constructive activities and personal performance. Those who master this dimension have the ability to encourage themselves to improve and channel their emotions in a positive and effective way.

2.6.2 *Previous studies on emotional intelligence*

EI originates from the concept of social intelligence first proposed by Thorndike in 1920, who defined social intelligence as the ability to understand and manage men, women, boys and girls to act wisely in interpersonal relationships. According to Thorndike's ideas, Gardner (1993) incorporated interpersonal intelligence and personal internal intelligence into the theory of multiple intelligences. According to Gardner, social intelligence is one of the seven fields of intelligence, including personal interpersonal intelligence and personal inner intelligence. Introspective intelligence is related to one's ability to manage oneself and symbolizes complex and highly differentiated emotions (1993). Interpersonal intelligence refers to a person's ability to deal with relationships and to notice and distinguish between other individuals, especially their emotions, tempers, motivations and intentions. Therefore, EI can be understood as the combination of one's introspective intelligence and interpersonal intelligence.

2.7 Safety Behaviour

Safety behaviour can be defined as employee behaviour and attitudes towards

safety activities (Burt *et al.*, 2009). Parboteeah and Kapp (2008) believed that safety behaviour were key components of maintaining safe work environments, because it reflected really individual behaviour. According to research of Larsson, Pousette and Torner (2008), safety behaviour included three types of behaviour: structural safety behaviour, such as participation in organized safety activities; interactive safety behaviour, such as the interaction between management and subordinates in safety activities; and personal safety behaviour, aimed at personal safety. Broadbent (2004) defined two types of self-reported safety behaviour: compliance and participation. Safety compliance behaviour refers to the core activities that an individual must maintain for workplace safety. Safety participation behaviour refers to employee participation in activities that improve their safety behaviour, such as safety meetings or setting safety goals (Neal and Griffin, 2006).

Extant studies have identified various factors influencing safety behaviour, including the safety climate (Griffin and Neal, 2000; Lu and Tsai, 2010; Zohar, 1980a), safety training (Lu and Tsai, 2010; Zohar, 1980a), safety motivation (Griffin and Neal, 2000; Lu and Shang, 2005; Zohar, 1980a), safety policy (Lu and Tsai, 2010; Lu and Yang, 2011), safety communications (Clarke, 1999; O'Dea and Flin, 2001; Wu *et al.*, 2009), site safety management (Lu and Tsai, 2008; Mearns, *et al.*, 2003) and organizational safety management (Cooper and Phillips, 2004; Dedobbeleer and Beland, 1991; Zohar, 1980a). However, job stress and EI have a significantly impact on employee behaviour (Leung *et al.*, 2012; Wiegand, 2007). The research on the influence of job stress and EI on safety behaviour is obviously insufficient. Stress can lead employees to engage in unsafe practices because of reduced awareness of and compliance with safety regulations, which is a major cause of accidents (Leung *et al.*, 2012).

2.7.1 Definition of safety behaviour

Discussing the differences between task and contextual performance, Borman *et al.* (1993) delineated two types of safety behaviour: compliance and participation. Safety compliance activities are core activities that individuals must carry out to maintain workplace safety, including adherence to standard work procedures and the wearing of personal protective equipment. Safety participation describes behaviour that do not directly contribute to an individual's personal safety but help develop an environment that supports safety. These behaviour include participating in voluntary safety activities, helping coworkers with safety-related issues and attending safety meetings.

2.7.2 Extant studies on safety behaviour

Integrating role theory, social exchange, organizational citizenship and climate research, Hofmann *et al.* (2003) suggested that employees would reciprocate the implied obligations of leadership-based social exchange by expanding their role and behaving in ways consistent with contextual behavioral expectations. They indicated that the quality of LMX relationships could predict the degree to which employees view citizenship behaviour as part of their formal role and the degree to which they engage in OCB.

The self-reporting of safety behaviour and perceptions of safety can offer alternative measures for determining workplace safety (Dejoy, 1994; Hofmann *et al.*, 1995; Janssens *et al.*, 1995). Proactive measures of employee perceptions of safety are considered the most useful indicator of safety performance (Borman and Motowidlo, 1993). Neal and Griffin (1997) and Griffin and Neal (2000) identified two types of safety behaviour: compliance and participation. Safety compliance refers to the adherence of safety procedures and the safe conduct of work. Meanwhile, safety participation is a safety-oriented behaviour involving

participation in safety meetings, setting of safety goals, provision of safety suggestions within the organization and expending of effort to improve workplace safety (Neal *et al.*, 2000). Neal *et al.* (2000) used the term of safety compliance to describe the primary activities needed to be carried out by individuals to maintain workplace safety (Broadbent, 2004; Zhou *et al.*, 2008).

2.8 Summary

This chapter introduced the theoretical background of LMX, safety climate, OCB, EI, job stress and employee safety behaviour. Although there were several other relational variables pertaining to organizational behaviour, such as LMX and OCB, this study included the variables having the greatest impact on employee safety behaviour in the context of container terminal operations. As indicated in this chapter, each relationship variable included in this study was identified in previous studies. The discussion of these variables and the relevant literature in this chapter serves as the foundation for the development of this study's conceptual model and hypotheses. The conceptual model and hypotheses are developed in the next chapter.

CHAPTER 3:   RESEARCH DESING AND METHODOLOGY

This chapter comprises six sections. The first section addresses our conceptual model and research hypotheses. The second section explains this study's analytical steps, including instrument development, exploratory study and confirmatory study using a structure equation model. The third section describes data collection and sampling. The fourth discusses the measurements of the variables used in this study in accordance with the extant literature. The fifth section conducts a non-response bias test. The final section provides a summary of this chapter and the methodology employed in this study.

3.1   Conceptual Model and Research Hypotheses

This study applies the social exchange theory (SET) to examine the effects of leader–member exchange, safety climate, and organizational citizenship behaviour on employees' safety behaviour in container terminal firms. The model also adds two factors reflecting employees' EI and job stress to understand their status. Figure 3-1 presents this study's conceptual model. The figure indicates the effect of four antecedent factors: safety climate; leader–member exchange (LMX); OCB; and job stress. These affect employee safety behaviour in container terminal operations. Figure 3-1 hypothesizes the effect of LMX and EI on OCB. The model also illustrates the effect of safety climate on EI and the effect of EI on job stress. Note that safety climate and EI are expected to influence LMX. This section discusses the linkages between the variables in the model and provides the rationale for these proposed relationships.
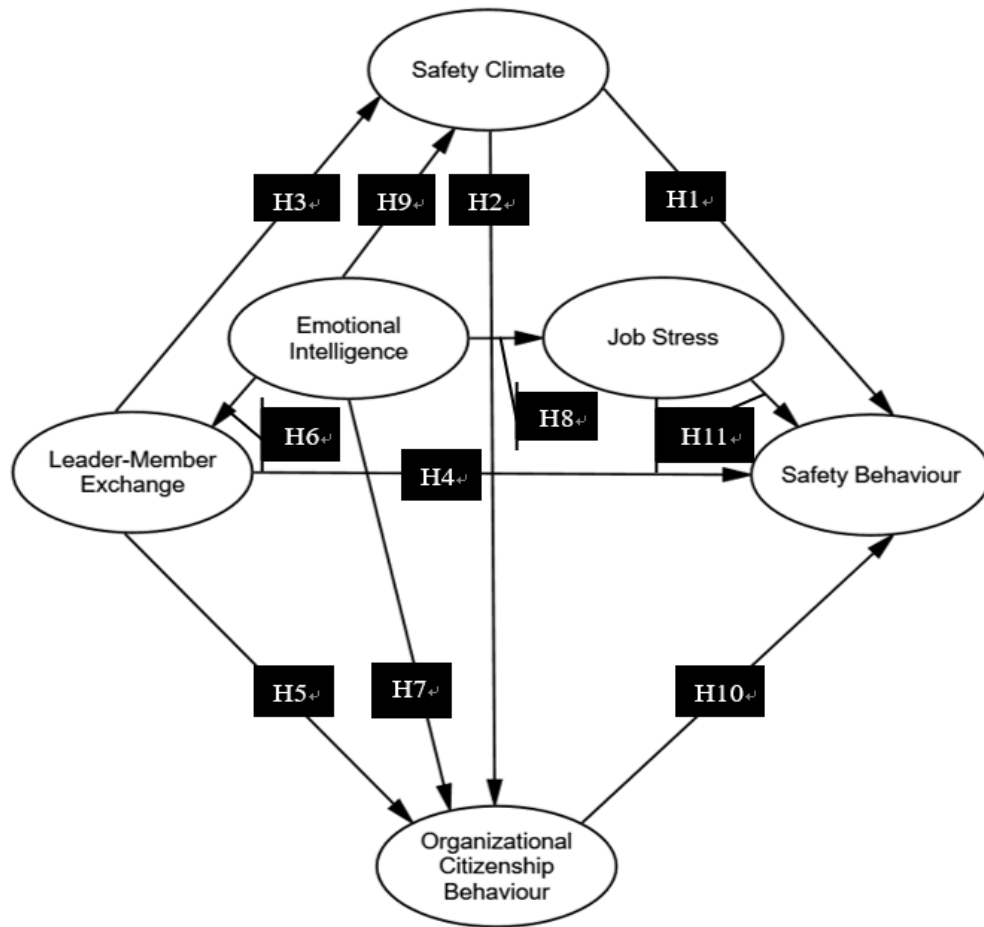
Figure 3-1 The Conceptual Model

3.1.1 *Safety climate, safety behaviour, and organizational citizenship behaviour*

Safety climate refers to employees' common views on specific policies, practices, procedures and employees' safety behaviour that are rewarded and encouraged by specific organizations (Zohar and Tenne-Gazit, 2008). Organizational policies and practices are related to specific aspects of performance, including those of financial performance, quality of service and safety (Zohar and Tenne-Gazit, 2008). As a special form of organizational climate, safety climate reflects individual perceptions of the safety value of working environment (Neal *et al.*, 2000). Therefore, a safety climate refers to a series of consistent views and expectations of employees on organizational safety (Zohar, 1980b). Therefore, a

safety climate can be defined as an individual's perception of safety-related behaviour, procedures and policies, which are related to safety issues that affect personal work interests (Christian *et al.*, 2009; James and James, 1989). More specifically, a safety climate occurs when these safety perceptions are shared and emphasized among individuals in specific work environments (Christian *et al.*, 2009).

Clarke (2006) used meta-analysis to suggest that safety climate was an important determinant of safety behaviour and was related to the occurrence of accidents. Therefore, the safety climate is expected to have a positive impact on employees' safety behaviour, reducing potential risks and accidents. In fact, most extant studies showed that a safety climate has a positive impact on safety performance (Brown and Holmes, 1986; Dedobbeleer and Beland, 1991; DeJoy, 1994; Gillen *et al.*, 2002; Glendon and Litherland, 2001; Lu and Tsai, 2010; Lu and Yang, 2011). Lu and Yang (2011) demonstrated five dimensions of safety climate based on the previous research results, namely those of safety motivation (Griffin and Neal, 2000), Safety policy (Lu and Tsai, 2008), safety communication (Clarke, 1999), emergency preparedness (Lu and Yang, 2011) and safety training (Zohar, 1980a). Safety training and emergency preparedness provided by the organization positively affects self-reported safety behaviour, such as safety compliance and participation. Lee *et al.* (2007) argued that, when an organization emphasized the value of safety and its employees recognized safety management, the employee organization safety committee was surely strengthened. Accordingly, the following hypotheses are proposed:

Hypothesis 1: Safety climate has a positive effect on safety behaviour.

Hypothesis 2: Safety climate has a positive effect on OCB.

3.1.2 Leader-member exchange and safety climate

Container terminal operations are among the riskiest of industries. The main operators or employees in this department include front-line loaders, accountants, crane operators, tractor drivers, engineers and maintenance personnel. The yard manager is responsible for terminal operations and the protection and safety of containers and employees. Therefore, teamwork is necessary to ensure safety. Container terminal employees play different roles alongside other members and colleagues in the organization. Although container terminal operators play different roles, the interaction between managers and employees has an important impact on employees' behaviour. As mentioned earlier, core employees are more likely to meet the expectations of their bosses (leaders) when they think they are loved, respected and appreciated. Therefore, in a high-quality relationship, the container terminal supervisor and his subordinates participate in cooperative problem solving, forming a set of mutually reinforcing teamwork behaviour. Conversely, low-quality relationships will hinder the development of such teamwork in container terminal operations and will have a negative impact on safety. Accordingly, the following hypothesis is proposed in this study.

Hypothesis 3: LMX has a positive effect on safety climate.

3.1.3 Leader-member exchange and safety behaviour

According to SET, people will perceive an obligation to reciprocate when they receive favorable treatment in social interactions. In those organizations, employees are more likely to fulfil expectations when they feel liked, admired and respected by management. Therefore, subordinates in high-quality leader–member exchanges may feel obligated to reciprocate in favor of their supervisors. Safety behaviour are likely avenues for such reciprocation. Although formal regulations tend to involve some basic safety requirements, numerous studies have indicated

that employees often choose to ignore safety regulations and take shortcuts to increase productivity for personal gain. In many cases, violating safety regulations will not lead to direct, immediate losses, although strict compliance with these regulations will be perceived as impeding productivity. In the highly competitive world of modern business, being faster than competitors is of significant value. Tight schedules and project timetables often prompt both management and employees to choose productivity over safety. As such, it is not entirely surprising that many employees consider compliance with safety regulations as an extra burden. Indeed, a case study conducted in the coal-mining industry showed that both the management board and miners regarded production as their primary task and safety as something extra (Paul and Maiti, 2007). Accordingly, this study proposes the following hypothesis:

Hypothesis 4: LMX has a positive effect on safety behaviour.

3.1.4 *Leader-member exchange, and organizational citizenship behaviour*

According to SET, LMX relationships are characterized by members' beliefs that they are obliged to reciprocate within high-quality relationships (Hofmann *et al.*, 2003). These high-quality relationships or communications are based on interaction, trust, support and rewards that go beyond normal job descriptions (Dienesch and Liden, 1986; Liden *et al.*, 1997). In essence, employees in high-quality LMX relationships will reciprocate the favors of their leaders or supervisors by participating in civic behaviour beneficial to their leaders and colleagues in the organization (Liden *et al.*, 1997). Therefore, high-quality social relations will promote OCB.

Therefore, container terminal employees having high-quality relationships will value their working environment. Safety is an important issue in high-risk

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environments. Therefore, employees who value their behaviour will work safely. Therefore, high-quality LMX relationships lead to increased roles for container terminal employees beyond their formal requirements, thus fostering OCB. Scholars have emphasized the value of OCB in improving organizational safety performance. In summary, the research hypothesis is as follows:

Hypothesis 5: LMX has a positive effect on OCB.

3.1.5   Emotional intelligence and leader-member exchange

Jordan and Troth (2010) believed that information would directly affect the quality of LMX. In a way, LMX is emotional by nature. Bass (1990) was among the first scholars to notice the importance of emotional maturity in leadership. Dasborough (2006) continued this tradition, expressing that the ability of leaders to understand and manage emotions was the core of their effectiveness. Kellett *et al.* (2006) found the connection between followers' perception of the emotions displayed by leaders and their perceptions of the emergence of leadership. This connection was also found in an earlier study by Dasborough and Ashkanasy (2002), who found that the emotional expression of leaders was crucial for developing and maintaining relationships with followers.

EI includes a wide range of competencies that may be useful in understanding and dealing with the relationship issues at the heart of LMX. Extant studies have examined individual variables, such as agreeableness and conscientiousness, suggesting that they had a direct impact on the way employees formed relationships (Kamdar and van Dyne, 2007). Based on the communication between leaders and followers, George (2000) believed that EI played a role in the development of transformational leadership. Palmer *et al.* (2001) demonstrated that EI was related to the perception of effective leadership. Rosete and Ciarrochi

(2005) found that Mayer Salovey Caruso's eq score was related to the administrative rating of leadership efficiency, while Kerr *et al.* (2006) found that followers had a similar effect on the rating of leadership efficiency. Meanwhile, Kellett *et al.* (2006) showed that the EI of leaders could predict followers' perceptions of leadership effectiveness. Scholars also found evidence that EI could predict the emergence of leaders (Pescosolido, 2002; Wolff *et al.*, 2002). Thus, there seems to be a link between EI and leadership behaviour. However, scholars still need to better understand how emotionally intelligent leaders do this. Therefore, this study asserts that the quality of LMX depends on how leaders and followers manage their relationships and EI plays an important role in this process.

EI mainly deals with interpersonal relationships (Mayer and Salovey, 1997). Because LMX relationships are essentially processes of social interaction (Liden *et al.*, 1993), it seems logical that EI plays a role in social situations where emotional feelings and performance are important. As a result, when leaders do not have close social ties with their subordinates, the impact of EI can diminish support. The study, however, argued that this was the exception, not the rule. EI is important for leaders, but so is the interaction between followers. Therefore, this study suggested that the EI of followers affects this relationship. Based on these arguments, we propose the following hypothesis:

Hypothesis 6: EI has a positive effect on LMX.

3.1.6 *Emotional intelligence and organizational citizenship beahviour*

OCB refers to the extra-role behaviour beyond formal role requirements (Smith *et al.*, 1983). EI can enhance altruistic behaviour, because it allows employees to understand and respond appropriately to the feelings of their colleagues. Employees having low EQ have less control over their own emotions

and oscillate between negative and positive emotions (Abraham, 1999). Staw *et al.* (1994) proposed three explanations for why emotionally intelligent people act altruistically. First, having a good mood equates to reinforcement and showing altruism is beneficial, because it keeps employees in a similar state of mind. Second, people who are in a good mood may be more sociable. Third, when employees are satisfied and they have a positive emotional response to work, they are more likely to engage in beneficial behaviour. In conclusion, this study proposes the following hypothesis:

Hypothesis 7: EI has a positive effect on OCB.

3.1.7 *Emotional intelligence and job stress*

Many studies have attempted to examine the relationship between EI and job stress (Bar–on *et al.*, 2000; Lu and Kuo, 2016; Nikolaou and Tsaousis, 2002; Sy *et al.*, 2006). However, a review of the literature suggests that the impact of EI on workplace stress is unclear. Based on existing theories and studies, a research model has been established to study the paths between the variables proposed in the model and the direct and indirect effects of these relations. Sy *et al.* (2006) and Nikolaou and Tsaousis (2002) believed that employees having high EI felt less occupational pressure in the work environment. However, employees having low EI had a lower sense of self, experienced greater difficulties and were unable to cope with their emotions, resulting in higher levels of stress, which negatively affected their job satisfaction.

Previous research has shown that certain types of stress produce satisfying results and that certain types of stress are often associated with positive work outcomes. For example, LePine *et al.* (2005) observed that, when stress was interpreted as a challenge, it could lead to internal incentives and better

performance results. Although some researchers pointed out that the relationship between stress and performance was either positively linear or an inverted U-shaped, most people found negative stress-performance relationships (Gilboa *et al.*, 2008; Siu, 2003; Van dyne *et al.*, 2002). Job stress is often considered a dysfunctional effect that reduces both the quality and quantity of performance. Job stress also wastes personal time and energy, limiting their attention to the task at hand, which negatively affects their job performance (Siu, 2003). In conclusion, this study proposes the following hypothesis:

Hypothesis 8: EI has a positive effect on job stress.

3.1.8 *Emotional intelligence and safety climate*

As mentioned, safety climate refers to the common view of employees when conducting safety management within the organization (Zohar, 1980b). However, a manager or supervisor should not be the only person responsible for safety. Every employee should be involved. Required employee skills, abilities, clear tasks and teamwork is required.

EI is a special social skill that includes the ability to accurately evaluate, perceive and express emotions. It includes the ability to understand emotions and emotional knowledge and the ability to control emotions to achieve organizational goals (Salovey and Mayer *et al.* 1990; Mayer and Salovey, 1997). Jordan and Troth (2004) found that individuals in the work team had the ability to solve team problems and conflicts. Stough and De Guara (2003) found that a teams' EI was positively correlated with the team's and organization's ability to succeed. Vasudevan and Mahadi (2017) suggested that EI was a key contributor to organizational commitment and organizational climate, because it only served to maintain social communications related to mental health. Studies have found that

EI has had a positive impact on the implementation of safety management and could lead to the formation of a safe *climate* (Dingsdag *et al.*, 2006; Sunindijo and Zou, 2009). Accordingly, the following hypothesis is proposed:

Hypothesis 9: Emotional intelligence has a positive effect on safety climate.

3.1.9 *Organizational citizenship behaviour and safety behaviour*

Scholars have explored the concept of OCB from the perspective of organizational commitment. Organizational commitment can be defined as a psychological contract connecting employees with the organization, which can be used to predict employees' turnover intentions, performance expectations and organizational efficiency. Scholars have provided different classifications of organizational commitment. Mowday *et al.* (1982) identified four representative antecedents of organizational commitment: personal characteristics; job characteristics; job experience; and structural characteristics. Randall (1987) pointed out that, if the level of commitment were low, employees' civic behaviour would be restricted. These premises established the importance of organizational commitment. Additionally, the meta-analysis showed that organizational commitment was associated with job satisfaction, job engagement and job commitment. These three types of commitment can be used to predict turnover intention. In this respect, emotional commitment is particularly associated with attendance, performance and OCB (Meyer *et al.*, 1993).

According to Allen and Meyer (1990), the components of organizational commitment can be divided into affective commitment, continuous commitment and normative commitment. Emotional commitment is a state of mind in which individuals identify with their organization, actively participate in it and have feelings for it. When employees realize that the cost of leaving the company is

greater than the cost of staying, they will stay. Normative commitment refers to employees' sense of obligation to the organization, which is rooted in the fact that employees should be loyal to the employer or common social values in the organization. On safety-related topics, management seems primarily interested in emotional commitment, because its goal is to inspire willingness to reduce risky behaviour, improve work environments and control hazards. Koradecka (2001) suggested that companies should establish a link between occupational safety and health. However, this can only happen if employees recognize the company's safety commitment and share the value of safety throughout the organization. In this way, the psychological attachment of employees to the organization can be enhanced, thus reducing the tendency of resignation and increasing safety behaviour and civic behaviour. This relationship is a well-defined form of social exchange, which is widely used to explain the relationship between employee organizational citizenship and safety behaviour (Konovsky and Pugh, 1994). In conclusion, we provide the research hypothesis as follows:

Hypothesis 10: OCB has a positive effect on safety behaviour.

3.1.10 Job stress and safety behaviour

Chronic job stress can affect safe behaviour and increase the risk of injury in the workplace (Larsson *et al.*, 2008; Lu and Tsai, 2010; Lu and Yang, 2011). Literature strongly suggests that job stress can have a negative impact on employee job practices (Pettegrew *et al.*, 1981). Stress refers to any situation that causes an individual to produce a general psychophysiological response deviating from the equilibrium state (Ali *et al.*, 2010). Job stress can be defined as an individual's physical and emotional response to a harmful or threatening work environment (Adaramola, 2012; Jamal, 2007). Devereux *et al.* (2004) believed that

organizational behaviour and work environment could increase employees' job stress and affect their physical and mental health. Accordingly, the following hypothesis is proposed in this study:

Hypothesis 11: Job stress has a negative effect on safety behaviour.

3.2 Analytical Steps

The purpose of this study is to explore the effects of LMX, safety climate, OCB, job stress, EI and safety behaviour for container terminal operators. Researchers can use multiple regression and SEM methods to capture this causal relationship. However, multiple regression methods can only have one endogenous variable in a model and examine the relationship between these observed variables. In contrast, SEM can handle a large number of endogenous and exogenous variables, as well as potential and observational variables, as described above. SEM methods can also consider measurement errors, including random errors of unreliability and deviation avoidance (Rigdon, 1998). Therefore, SEM is powerful, because it can effectively deal with multicollinearity (Rigdon, 1998).

As shown in Figure 3-2, the analytical steps in this study were based on Koufteros (1999) and Koufteros *et al.* (2002). The first step, instrument development, included literature surveys and interviews with shipping executives and experts. The second step was exploratory research, which used exploratory factor analysis to determine key logistics service resources, logistics service capability and innovation capability dimensions. Furthermore, techniques, such as item-total correlation (or revised item-total correlation) and Cronbach's alpha, were used to develop and evaluate the measurement scale. The third step was confirmatory research. This was necessary, because the techniques described

above did not allow evaluation of 1-dimensional, convergent, or discriminant validity (Gerbing and Anderson, 1988; Koufteros, 1999; O'Leary, Kelly and Vokurka, 1998). These studies suggested the use of confirmatory factor analysis (CFA) and multi-indicator measurement to evaluate the validity of the measurement model (Anderson *et al.*, 1987; Anderson and Gerbing, 1987; Segar, 1997).

INSTRUMENT DEVELOPMENT
- Literature review and integration
- Theoretical basis
- Questionnaire design and measure
- Interviews with container shipping experts
- Selection of sample and research analytical methods

$\downarrow$

EXPLORATORY STUDY
- Item-total correlation
  - Corrected Item-total correlations > 0.5
  - Exploratory factor analysis within each block of loadings
  - Exploratory factor analysis of entire set
  - Reliability through Cronbach's alpha > 0.7

$\downarrow$

COMFIRMATORY STUDY
- Convergent validity
  - T-value of each loading is significance
  - R squared correlation > 0.3
- Fit indices and unidimensionality assessment
  - χ^2 is non-significant
  - Ratio of χ^2 to degree of freedom < 4.0
  - GFI, AGFI, NFI, TLI, CFI > 0.90
  - RMSEA, RMR < 0.05
- Discriminate validity
  - Extent to which a construct is truly distinct from other constructs
  - Construct reliability
  - Composite reliability > 0.6
  - Average variance extracted > 0.5

$\downarrow$

TEST STRUCTURAL MODEL
- Fit indices
- t-values of structural coefficients for significance

Figure 3-2 Analytical Steps

After verification of the measurement models, the fourth step estimated the

structural model between potential variables. In conclusion, this study collected

data from questionnaire surveys. These data were used to test the proposed conceptual model, which aimed to examine the impact of logistics service and innovation capabilities on the performance of Taiwan liner transportation companies. SPSS 21.0 (2012) was used to analyses the statistical software packages of Windows and AMOS 21.0 (2012).

3.3 Data Collection and Sampling

Data collection for this study was based on a questionnaire survey. The samples included employees of Taiwanese container terminals who engaged in activities like tallying, lashing and stevedoring. The demographic data pertaining to container terminal operators were drawn from the Directory of the Association of Container Freight Station Operators and the statistics were sourced from the Container Terminal Transport Association, Taiwan, in 2018. In total, 20 container terminal operators were identified and invited to participate in the survey. Of these, 11 operators were accepted and helped disseminate the survey questionnaires to employees. According to the Container Terminal Transport Association (2018), the amount of capital invested was 17.9 billion and 11 container terminal operators helped disseminate the survey, representing invested capital of 14.6 billion. The overall capital invested rate for this study was 81.7%.

The questionnaire, having a cover letter and postage-paid return envelope, was sent to 420 managers and employees in 11 container terminal companies in Taiwan. The initial survey elicited 237 usable responses. A follow-up survey was sent 4-weeks later, resulting in the return of an additional 87 usable responses. Therefore, the total usable number of responses was 324 from managers and employees of container terminal companies (see Table 3-1). The overall response rate for this study was 41.65%. Table 3-1 shows that the second mailing response

rate was low, the first mailing address was located north of Taiwan and the second mailing address was located south of Taiwan. It is possible that the same company received the same questionnaire from those in the south of Taiwan. The company then would have rejected response to the questionnaire. Thus, the second mailing response rate was lower than the first mailing.

Table 3-1 Questionnaire Response Rate

Respondents	Number Distributed (1)	Number Cancelled (2)	Effective Population (3) =(1)-(2)	Usable Responses (4)	Response Rate (4)/(3)
First mailing	420	17	403	237	58.81%
Second mailing	440	65	375	87	23.20%
Total	860	82	778	324	41.65%

3.4 Measurement

Three scales were used in this study: nominal, sequential and interval. Nominal scale was used for identification, because they have no numerical value (Kinnear *et al.*, 1993). The ordered scale was used to rank the tenure, age and income of netizens. These scales are considered to be interval scales commonly used in social-science research (Perry, 1998). Additionally, the interval scale was used to measure the subjective characteristics of the respondents. For example, in this study, respondents were asked about the relationship among their job title, work experience, age and education level, LMX, OCB, job stress, EI and safe behaviour. This scale was used for its power in arranging objects in a particular order and its ability to measure differences in distance response ratings (Burns and Bush, 2002; Churchill and Iacobcci, 2004; Kinnear *et al.*, 1993; Malhotra, 1999). There is no clear rule for the ideal number of scale points. However, many researchers acknowledged that opinions were best expressed on a scale of 5–7 (Aaker *et al.*, 2000; Malhotra, 1999; Sekaran, 2000). In fact, researchers have

shown that a five-point scale was as good as any other (Malhotra, 1999; Parasuraman *et al.*, 1991; Sekaran, 2000). Thus, the increase of scale cannot improve its reliability (Elmore and Beggs, 1975). This can cause confusion with the respondents (Aaker *et al.*, 2000; Hair *et al.*, 2003). Therefore, this study adopts the Likert five-point scale.

The questionnaire used in this study was designed to evaluate employee perceptions of safety climate, safety measures, OCB and LMX. With regard to safety climate, 19 safety climate measurement items were adopted from previous studies (Glendon and Litherland, 2001; Lu and Yang, 2011; Neal *et al.*, 2000; Probst, 2015) with interviews of container operators and stevedores.

Table 3-2 Measures of the Safety Climate

Items	Previous studies
1. My company announces safety policies.	Glendon and Litherland (2001);
2. My company establishes a safety responsibility system.	Neal *et al.* (2000); Lu and Yang (2011); Probst (2015).
3. My company sets up a work safety rule.	
4. My company motivates workers' safety behaviours.	
5. My company encourages workers' participation in safety decision-making.	
6. My company encourages workers to provide safety suggestion.	
7. My company provides sufficient safety education.	
8. The design of safety training programs is good in my company	
9. Safety training programs have been adopted in my workplace	
10. The safety training programs are helpful to prevent accidents.	

Table 3-2 Measures of the Safety Climate (Continue)

Items	Previous studies
11. My supervisor makes sure employees receive all the safety equipment needed to do the job safely. 12. My supervisor frequently inspects employees to obey the safety rules. 13. My supervisor uses explanations (not just compliance) to get us to act safely. 14. My supervisor refuses to ignore safety rules when work falls behind schedule. 15. My supervisor requires working safely when employees are tired or stressed. 16. My supervisor insists that employees obey safety rules when fixing equipment or machines. 17. My supervisor says a "good word" to workers who pay special attention to safety. 18. My supervisor spends time to help employees' learning in identifying problems before they arise. 19. My supervisor insists employees wear our protective equipment even if it is uncomfortable.	Glendon and Litherland (2001); Neal *et al.* (2000); Lu and Yang (2011); Probst (2015).

Respondents were invited to evaluate their firms using a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Table 3-2 displays the 19 safety climate measurement items used in this study. As Table 3-3 shows, 14 measurement items of safety behaviour were adopted from previous studies (Bolino and Turnley, 2005; Hofmann and Morgeson, 2003; Lu and Yang, 2011; Moorman and Blakely, 1995; Podsakoff *et al.*, 2014; Williams and Anderson, 1991) and interviews with shipping executives.

Table 3-3 Measures of the Safety Behaviour

Items	Previous studies
1. My subordinate complies with safety rules and standard operational procedures. 2. My subordinate has safety awareness at work. 3. My subordinate does not neglect safety, even when in a rush. 4. My subordinate actively provides safety improvement suggestions. 5. My subordinate wears personal protective equipment at work.	Bolino and Turnley (2005); Hofmann and Morgeson (2003); Lu and Yang (2011); Moorman and Blakely (1995); Williams and Anderson (1991); Podsakoff *et al.* (2014)
6. My subordinate participates in setting safety goal. 7. My subordinate actively participates in safety meetings. 8. I keep safety awareness at work 9. I comply with safety rules and standard operational procedures. 10. I do not neglect safety, even when in a rush. 11. I wear personal protective equipment at work. 12. I participate in setting safety goal 13. I actively provide safety improvement suggestions. 14. I actively participate in safety meetings.	

Table 3-4 shows the OCB measurement items; these 12 measurements items were adopted from previous studies (Fruhen *et al.*, 2014; Zohar and Luria, 2005; Luria and Rafiaeli, 2008).

Table 3-4 Measures of the Organizational Citizenship Behaviour

Items	Previous studies
1. I help co-worker who has been absent. 2. I help co-worker who has heavy workloads. 3. I actively help supervisor even he or her was not asked. 4. I take time to listen co-workers' problems and worries. 5. I actively help new employees. 6. I actively forward work safety-related information to co-workers. 7. I will give early notice when I unable to work. 8. I do not take undeserved work break at work. 9. I do not waste office hours on personal phone conversations. 10. I do not complain things that are not relevant to work. 11. I protect company's equipment and property. 12. I adhere to formal rules in order to maintain an order in the company.	Fruhen *et al.* (2014); Zohar and Luria (2005); Luria and Rafiaeli (2008)

Table 3-5 presents the measures of LMX. These 11 measurement items were adapted from previous studies (Liden and Maslyn, 1998; Li and Liao, 2014; Vidyarthi *et al.*, 2014).

Table 3-5 Measures of the Leader-Member Exchange

Items	Previous studies
1. My supervisor is satisfied with my working performance	Liden and Maslyn (1998); Li and Liao (2014); Vidyarthi *et al.* (2014)
2. My supervisor understands my job problems and needs.	
3. My supervisor recognizes my potential.	
4. Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.	
5. Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense	
6. My supervisor would defend and justify my decision if I was not present to do so	
7. I have a good working relationship with my supervisor.	

3.5 Non-Response Bias Test

It is important to deal with the potential problems of non-response bias. Armstrong and Overton (1977) suggested that late respondents could be deemed similar to non-respondents. Therefore, this study followed the recommendation of Armstrong and Overton (1977) and conducted a comparison of early (first wave) and late (second wave) respondents to test for non-response bias via t-test analysis. Based on their response waves (first and second), the 324 survey respondents were divided into two groups: early (n = 237) and late (n = 87). This study then performed t-tests on the two groups' perceptions of the survey items regarding LMX, safety climate, OCB, employees' safety behaviour, employees' job stress and EI attributes. In Table 3-6, the F ratio of two mean squares is seen. When the F-value is large, and the significance level is small (<0.05 or 0.01) the null hypothesis can be rejected. In other words, a small significance level indicates that

the results probably are not caused by random chance. As Table 3-6 to Table 3-11 shows, results indicate no significant differences between the two groups' perceptions of the various measures at the 5% significance level. As such, results suggest that non-response bias is not a problem, with the responses of first wave respondents appearing to reflect those of the second wave.

Table 3-6 Comparison of Respondent and Non-respondent Groups in Terms of LMX Attributes

	LMX attributes	Respondent (N=237)		Non-respondent (N=87)		F ratio	Sig.
		Mean	S.D.	Mean	S.D.		
1	My supervisor is satisfied with my working performance	3.92	0.65	3.90	0.63	0.55	0.814
2	My supervisor understands my job problems and needs.	3.91	0.70	3.92	0.65	0.009	0.925
3	My supervisor recognizes my potential.	3.95	0.69	3.95	0.66	0.011	0.917
4	Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.	4.11	0.78	4.09	0.73	0.034	0.853
5	Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense.	3.54	0.90	3.54	0.91	0.449	0.503
6	I would defend and justify my supervisor's decision if he was not present to do so.	3.93	0.78	3.93	0.76	0.000	0.988
7	I have a good working relationship with my supervisor.	4.10	0.72	4.08	0.69	0.035	0.853

Table 3-7 Comparison of Respondent and Non-respondent Groups in Terms of Safety Climate Attributes

Safety Climate attributes	Respondent (N=237)		Non-respondent (N=87)		F ratio	F Prob
	Mean	S.D.	Mean	S.D.		
1 My company announces safety policies	4.29	0.65	4.31	0.69	0.80	0.78
2 My company establishes a safety responsibility system.	4.26	0.69	4.26	0.74	0.001	0.98
3 My company sets up a work safety rule.	4.43	0.61	4.44	0.64	0.019	0.89
4 My company motivates workers' safety behaviours.	4.05	0.77	4.06	0.80	0.001	0.98
5 My company encourages workers' participation in safety decision-making.	4.12	0.72	4.11	0.75	0.007	0.94
6 My company encourages workers to provide safety suggestion.	4.16	0.72	4.16	0.76	0.003	0.96
7 My company provides sufficient safety education.	4.16	0.77	4.15	0.82	0.024	0.88
8 The design of safety training programs is good in my company.	4.07	0.82	4.07	0.86	0.00	0.99
9 Safety training programs have been adopted in my workplace.	4.08	0.77	4.8	0.82	0.00	0.99
10 The safety training programs are helpful to prevent accidents	4.20	0.79	4.18	0.83	0.021	0.89
11 My supervisor makes sure employees receive all the safety equipment needed to do the job safely.	4.14	0.65	4.16	0.70	0.067	0.80
12 My supervisor frequently inspects employees to obey the safety rules.	4.14	0.71	4.15	0.74	0.026	0.87
13 My supervisor uses explanations to get us to act safely.	4.21	0.69	4.22	0.72	0.018	0.90

Table 3-8 Comparison of Respondent and Non-respondent Groups in Terms of Safety Climate Attributes (Continue)

Safety Climate attributes		Respondent (N=237)		Non-respondent (N=87		F ratio	F Prob.
		Mean	S.D.	Mean	S.D.		
14	My supervisor refuses to ignore safety rules when work falls behind schedule.	4.12	0.77	4.14	0.80	0.026	0.87
15	My supervisor requires working safely when employees are tired or stressed.	4.03	0.85	4.07	0.86	0.137	0.71
16	My supervisor insists that employees obey safety rules when fixing equipment or machines.	4.19	0.73	4.21	0.75	0.053	0.82
17	My supervisor says a "good word" to workers who pay special attention to safety.	4.23	0.71	4.24	0.71	0.023	0.88
18	My supervisor spends time to help employees' learning in identifying problems before they arise.	4.08	0.83	4.14	0.80	0.363	0.55
19	My supervisor insists employees wear our protective equipment even if it is uncomfortable.	4.12	0.77	4.13	0.80	0.002	0.97

Table 3-9 Comparison of Respondent and Non-respondent Groups in Terms of Safety Behaviour Attributes

Safety Behaviour attributes	Respondent (N=237)		Non-respondent (N=87)		F ratio	F Prob.
	Mean	S.D.	Mean	S.D.		
1 My subordinate has safety awareness at work	4.44	0.57	4.44	0.59	0.01	0.93
2 My subordinate complies with safety rules and standard operational procedures.	4.41	0.59	4.38	0.60	0.12	0.73
3 My subordinate does not neglect safety, even when in a rush.	4.37	0.67	4.37	0.67	0.00	0.99
4 My subordinate wears personal protective equipment at work	4.23	0.81	4.21	0.84	0.00	0.81
5 My subordinate participates in setting safety goal.	4.2	0.73	4.21	0.75	0.00	0.99
6 My subordinate actively provides safety improvement suggestions.	4.1	0.75	4.1	0.75	0.00	0.98
7 My subordinate actively participates in safety meetings.	4.1	0.77	4.1	0.78	0.00	0.93

Table 3-10 Comparison of Respondent and Non-respondent Groups in Terms of
OCB Attributes

Organizational Citizenship Behaviour	Respondent (N=237)		Non-respondent (N=87)		F ratio	F Prob.
	Mean	S.D.	Mean	S.D.		
1 I help co-worker who has been absent.	4.18	0.65	4.17	0.63	0.012	0.91
2 I help co-worker who has heavy workloads.	4.24	0.64	4.23	0.62	0.034	0.85
3 I actively help supervisor even he or her was not asked.	4.12	0.68	4.10	0.67	0.030	0.86
4 I take time to listen co-workers' problems and worries.	4.12	0.68	4.11	0.66	0.008	0.93
5 I actively help new employees	4.24	0.56	4.26	0.56	0.078	0.78
6 I actively forward work safety-related information to co-workers.	4.32	0.57	4.33	0.56	0.032	0.86
7 I will give early notice when I unable to work.	4.40	0.56	4.44	0.56	0.324	0.57
8 I do not take undeserved work break at work.	4.15	0.71	4.14	0.70	0.025	0.77
9 I do not waste office hours on personal phone conversations.	3.73	0.84	0.37	0.87	0.174	0.68
10 I do not complain things that are not relevant to work.	4.13	0.66	4.08	0.67	0.306	0.58
11 I protect company's equipment and property.	4.36	0.60	4.33	0.59	0.115	0.73
12 I adhere to formal rules in order to maintain an order in the company.	4.38	0.56	4.36	0.55	0.157	0.70

Table 3-11 Comparison of Respondent and Non-respondent Groups in Terms of
Job Stress Attributes

Job Stress attributes	Respondent (N=237)		Non-respondent (N=87)		F ratio	F Prob.
	Mean	S.D.	Mean	S.D.		
1 My job must complete a lot of work.	3.78	0.80	3.84	0.76	0.258	0.61
2 My job must work very hard	3.52	0.83	3.57	0.80	0.249	0.62
3 My job has time pressure.	3.93	0.70	3.91	0.71	0.077	0.78
4 I have to work at a rapid pace to complete all my tasks.	3.94	0.77	3.93	0.74	0.004	0.95
5 My job must be performing complex tasks.	3.68	0.89	3.71	0.86	0.091	0.76
6 My job must use a broad set of skills and abilities	3.89	0.80	3.92	0.81	0.086	0.77
7 My job must balance several factors at once.	4.05	0.67	4.01	0.67	0.172	0.68
8 My job must multitask different assigned jobs at the same time.	3.90	0.78	3.90	0.76	0.001	0.98
9 My job requires a high level of responsibility.	4.35	0.58	4.32	0.56	0.207	0.65
10 My job requires a high level of accountability	4.13	0.65	4.11	0.64	0.038	0.85

Table 3-12 Comparison of Respondent and Non-respondent Groups in Terms of Emotional Intelligence Attributes

	Emotional Intelligence attributes	Respondent (N=237)		Non-respondent (N=87)		F ratio	F Prob.
		Mean	S.D.	Mean	S.D.		
1	I have a good sense of why I have certain feelings most of the time.	4.17	0.56	4.11	0.56	0.593	0.44
2	I have good understanding of my own emotions.	4.19	0.61	4.14	0.65	0.515	0.47
3	I really understand what I feel.	4.17	0.58	4.11	0.58	0.549	0.46
4	I always know whether or not I am happy.	4.13	0.73	4.08	0.72	0.255	0.61
5	I always know my friends' emotions from their behaviour.	3.95	0.64	3.93	0.64	0.053	0.82
6	I am a good observer of others' emotions	3.87	0.69	3.83	0.69	0.234	0.63
7	I am sensitive to the feelings and emotions of others	3.98	0.65	3.93	0.66	0.344	0.56
8	I have good understanding of the emotions of people around me.	3.88	0.69	3.80	0.73	0.687	0.41
9	I always set goals for myself and then try my best to achieve them.	4.11	0.66	4.11	0.66	0.000	0.99
10	I always tell myself I am a competent person.	3.97	0.70	3.93	0.70	0.161	0.69
11	I am a self-motivating person.	3.97	0.72	3.92	0.72	0.269	0.60
12	I would always encourage myself to try my best.	4.08	0.71	4.06	0.72	0.091	0.76
13	I can control my temper so that I can handle difficulties rationally.	4.00	0.66	4.00	0.67	0.003	0.96
14	I am quite capable of controlling my own emotions.	4.03	0.62	4.02	0.63	0.007	0.93
15	I can always calm down quickly when I am very angry.	3.89	0.70	3.90	0.70	0.005	0.94
16	I have good control of my own emotions.	3.97	0.65	3.98	0.65	0.007	0.94

3.6 Summary

This chapter explored this study's conceptual model and research hypotheses, analytical steps, data collection methods, sampling methodology, measurements used and the results of the non-response bias test. The conceptual model and research hypotheses were proposed to explain the causal relationships between LMX, safety climate, OCB, EI, job stress and safety behaviour. The research methods adopted in this study include validity, reliability, exploratory factor analysis, CFA and SEM. Having introduced the study design and the methodology

applied in this research, the next section presents the general findings and descriptive statistics.

CHAPTER 4:   GENERAL FINDINGS AND DESCRIPTIVE STATISTICS

This chapter presents the general results and descriptive statistics resulting from the analyses. This chapter comprises seven sections. Section 4.1 presents the characteristics of respondents. Section 4.2 provides general information about the respondents, including personal and company information. Section 4.3 shows the level of agreement in respondent perceptions of LMX, safety climate, OCB, job stress, and emotional intelligence. Section 4.4 discusses the differences between perceptions of LMX, safety climate, OCB, job stress, and emotional intelligence according to respondent profiles. The final section summarises the general findings and descriptive statistics.

4.1   Respondent's Characteristics

Respondents information can be divided into two categories: namely, personal information and company information. Personal information includes respondent job titles, years of working experience, tenure in their current company, age, and educational level. Company information comprises the type of business and firm size.

(1)   Job title

Respondent characteristics or profiles are displayed in Table 4-1, Result show that 4.6% of respondents were managers or assistant manager, 35.2% were supervisors, 0.3% were sale representatives, 12.7% were specialists, while 47.2% occupied other positions (including stevedores, forklift drivers, and tallies). More than 60% of respondents were frontline staff. It was important to have respondents from frontline staff because they are involving in container terminal operations.

(2) Years of industry experience

It is necessary to ascertain how respondents acknowledge container terminal operations in order to ensure the reliability of the questionnaire survey. Respondents were asked to indicate how long they had worked in the terminal field. Table 4-1 shows, 29.6 % of respondents had worked in the container terminal industry for less than five years, while over 55.9 % of respondents had worked in the container terminal industry for more than ten years. The result indicates that the majority of respondents had rich practical experience to answer the questions.

Table 4-1 Profile of Respondents

		Number of respondents	Percent of respondents
Job Title	Manager /Assistant manager	16	4.9
	Supervisor	114	35.2
	Specialist	41	12.7
	General employee (e.g. Tally, Frontline Staff)	153	47.2
Working experience (years)	Less than 5	96	29.6
	6–10	47	14.5
	11–15	32	9.9
	16–20	53	16.4
	More than 20	96	29.6
Tenure in current company (years)	Less than 5	101	31.2
	6–10	50	15.4
	11–15	41	12.7
	16–20	48	14.8
	More than 20	84	25.9
Age (years)	Less than 30	29	9.0
	31–40	103	31.8
	41–50	87	26.9
	51–60	84	25.9
	More than 60	21	6.5
Education level	High school	104	32.1
	Collage/University	200	61.7
	Master and above	20	6.2
Firm Size	51–100 people	17	5.2
	101–200 people	188	58
	201 and above people	119	36.7
Service Department	Administration	8	2.5
	Business	43	13.3
	Engineer	208	64.2
	Others	65	20.1

(3) Tenure in current company (years)

In Table 4-1, the results indicate that 31.2 % of respondents had worked in their present company for less than 5 years, while 15.4 % of respondents had worked in their present company for between 6 and 10 years. Nearly 26% of respondents had been employed by their present company for more than 20 years.

(4) Age

In Table 4-1, the results indicate that 31.8 % of respondents were aged between 31 and 40, while 26.9 % of responses were aged between 41 and 50. Most respondents (84.6%) were over 30 years of age.

(5) Education level

In regard to education level, Table 4-1 shows that 61.7 % of respondents had college/university education, while 32.1% held a high school degree. As such, the majority of respondents held college/university level education.

(6) Firm size

As indicated in Table 4-1, 58% of responding companies had 101–200 employees, while 36.7% of companies had 200 or more. This indicates that the majority of container terminal firms analysed in this study were small- and medium-size firms.

4.2 Respondents' Perceptions of LMX, Safety Climate, OCB, Job Stress, and Emotional Intelligence

This section evaluates respondents' responses to the items measuring safety climate, OCB, job stress, and emotional intelligence. Respondents were asked to rate the quality of the relationships between leaders and followers (LMX), the company's safety climate, as well as employees' organizational citizenship

behaviour, job stress, and emotional intelligence using a five-point Likert scale ranging from '1 = strongly disagree' to '5 = strongly agree'. The results are described in the following five sub-sections: LMX, safety climate, organisational citizenship behaviour, job stress, and emotional intelligence.

4.2.1 Leader-member exchange

The results of respondents' perceptions of LMX are shown in Table 4-2. Respondents tended to strongly agree with two items: *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4) (mean = 4.10) and *I have a good working relationship with my supervisor* (LMX7) (mean = 4.09). The other five attributes were generally rated as 'agree', with mean scores greater than 3.5. However, respondents tended to agree less with the item *regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense* (LMX5). The result reveal that respondents strongly agree that their supervisor help them solve problem in their work.

Table 4-2 The Relative Agreement of LMX Attributes

	LMX Attributes	Mean	S.D.
LMX4	Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.	4.10	0.764
LMX7	I have a good working relationship with my supervisor.	4.09	0.711
LMX3	My supervisor recognizes my potential.	3.95	0.682
LMX6	My supervisor would defend and justify my decision if I was not present to do so.	3.93	0.780
LMX2	My supervisor understands my job problems and needs.	3.91	0.685
LMX1	My supervisor is satisfied with my working performance.	3.91	0.645
LMX5	Regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense.	3.54	0.905

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

4.2.2 Safety climate

Table 4-3 indicates that the mean scores of safety climate items are greater than 4.0. This reflects that respondents agree or strongly agree with the items pertaining to their company's safety climate attributes.

Table 4-3 The Relative Agreement of Safety Climate Attributes

Safety Climate Attributes	Mean	S.D.
SC3 My company sets up a work safety rule.	4.43	0.62
SC1 My company announces safety policies	4.29	0.66
SC2 My company establishes a safety responsibility system.	4.26	0.70
SC17 My supervisor says a "good word" to workers who pay special attention to safety.	4.23	0.71
SC13 My supervisor uses explanations to get us to act safely.	4.21	0.70
SC10 The safety training programs are helpful to prevent accidents	4.19	0.80
SC16 My supervisor insists that employees obey safety rules when fixing equipment or machines.	4.19	0.73
SC7 My company provides sufficient safety education.	4.16	0.78
SC6 My company encourages workers to provide safety suggestion.	4.16	0.74
SC11 My supervisor makes sure employees receive all the safety equipment needed to do the job safely.	4.15	0.67
SC12 My supervisor frequently inspects employees to obey the safety rules.	4.14	0.71
SC14 My supervisor refuses to ignore safety rules when work falls behind schedule.	4.13	0.77
SC19 My company encourages workers' participation in safety decision-making.	4.12	0.73
SC5 My supervisor insists employees wear our protective equipment even if it is uncomfortable.	4.12	0.78
SC18 My supervisor spends time to help employees' learning in identifying problems before they arise.	4.09	0.82
SC9 Safety training programs have been adopted in my workplace.	4.08	0.79
SC8 The design of safety training programs is good in my company.	4.07	0.83
SC4 My company motivates workers' safety behaviours.	4.06	0.77
SC15 My supervisor requires working safely when employees are tired or stressed.	4.04	0.85

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

The majority of respondents were largely in agreement with five of the items (mean scores over 4.2): *My company has set up a work safety rule* (SC3), *my*

company announces safety policies (SC1), *my company has established a safety responsibility system* (SC2), *my supervisor says a 'good word' to workers who pay special attention to safety* (SC17), and *my supervisor uses explanations to get us to act safely* (SC13). The result reveal that respondents' companies has already set up a safety policy, and their supervisors make sure their employees obey companies' safety rule.

4.2.3 *Employees' safety behaviour*

While employee safety behaviour is a significant issue in container terminal operations, few empirical studies have measured employee safety behaviour from supervisor's (leader's) perception. Results are displayed in Table 4-4.

Table 4-4 The Relative Agreement of Employees' Safety Behaviour Attributes from a Supervisor's Perception

Safety Behaviour Attributes		Mean	S.D.
LSB9	My subordinate has safety awareness at work	4.44	0.573
LSB8	My subordinate complies with safety rules and standard operational procedures.	4.40	0.588
LSB10	My subordinate does not neglect safety, even when in a rush.	4.37	0.671
LSB12	My subordinate wears personal protective equipment at work	4.23	0.819
LSB13	My subordinate participates in setting safety goal.	4.21	0.732
LSB11	My subordinate actively provides safety improvement suggestions.	4.14	0.748
LSB14	My subordinate actively participates in safety meetings.	4.05	0.767

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

The majority of supervisors strongly agreed with *my subordinate has safety awareness at work* (LSB9) (mean = 4.44), followed by *my subordinate complies with safety rules and standard operational procedures* (LSB8); *my subordinate does not neglect safety, even when in a rush* (LSB10); *my subordinate wears personal protective equipment at work* (LSB12); *my subordinate participates in setting safety goals* (LSB13); *my subordinate actively provides safety improvement*

suggestions (LSB11); and *my subordinate actively participates in safety meetings* (LSB14). The result shows that supervisors strongly agree their employees has safety awareness at work and compliances with company safety rules.

4.2.4 Organisational citizenship behaviour

In Table 4-5, the results indicate that respondents agreed or strongly agreed with the organisational citizenship behaviour items. The following items had average scores over 4.2: *I will give early notice when I unable to work* (OCB7), *I adhere to formal rules in order to maintain order in the company* (OCB12), *I protect the company's equipment and property* (OCB11), *I actively forward work safety-related information to co-workers* (OCB6), *I actively help new employees* (OCB5), and *I help co-workers who have heavy workloads* (OCB2). The results reveal that respondents strongly agree with most OCB attributes.

Table 4-5 The Relative Agreement of Organizational Citizenship Behaviour Attributes

Organizational Citizenship Behaviour Attributes		Mean	S.D.
OCB7	I will give early notice when I unable to work.	4.41	0.563
OCB12	I adhere to formal rules in order to maintain an order in the company	4.38	0.557
OCB11	I protect company's equipment and property	4.35	0.594
OCB6	I actively forward work safety-related information to co-workers	4.32	0.565
OCB5	I actively help new employees.	4.25	0.558
OCB2	I help co-worker who has heavy workloads.	4.24	0.637
OCB1	I help co-worker who has been absent	4.18	0.643
OCB8	I do not take undeserved work break at work	4.15	0.706
OCB4	I take time to listen co-workers' problems and worries	4.12	0.668
OCB10	I do not complain things that are not relevant to work	4.11	0.665
OCB3	I actively help supervisor even he or her was not asked.	4.11	0.674
OCB9	I do not waste office hours on personal phone conversations	3.72	0.849

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

4.2.5 Job stress

Table 4-6 indicates that respondents agreed or strongly agreed with the

following items, which received mean scores over 4.0: *My job requires a high level of responsibility* (JS9), *my job requires a high level of accountability* (JS10), and *my job must balance several factors at once* (JS7). The result reveals that respondents' job stress from a high level of responsibility, and accountability. In addition, most respondents do not agree they must work very hard.

Table 4-6 The Relative Agreement of Job Stress Attributes

Job Stress Attributes		Mean	S.D.
JS9	My job requires a high level of responsibility.	4.35	0.57
JS10	My job requires a high level of accountability	4.13	0.65
JS7	My job must balance several factors at once.	4.04	0.67
JS4	I have to work at a rapid pace to complete all my tasks.	3.94	0.76
JS3	My job has time pressure.	3.93	0.70
JS6	My job must use a broad set of skills and abilities	3.90	0.79
JS8	My job must multitask different assigned jobs at the same time.	3.90	0.77
JS1	My job must complete a lot of work.	3.80	0.79
JS5	My job must be performing complex tasks.	3.69	0.88
JS2	My job must work very hard	3.54	0.82

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

4.2.6 Emotional intelligence

Table 4-7 indicates that respondents agreed or strongly agreed with all emotional intelligence attributes. Respondents were most in agreement with the following emotional intelligence items, which had mean scores over 4.15: *I have good understanding of my own emotions* (EI9), *I have a good sense of why I have certain feelings most of the time* (EI10), and *I really understand what I feel* (EI7). The result shows that most respondents understanding their own emotions.

Table 4-7 The Relative Agreement of Emotional Intelligence Attributes

Emotional Intelligence Attributes	Mean	S.D.
EI2 I have good understanding of my own emotions.	4.18	0.62
EI1 I have a good sense of why I have certain feelings most of the time.	4.15	0.56
EI3 I really understand what I feel.	4.15	0.58
EI4 I always know whether or not I am happy.	4.11	0.73
EI9 I always set goals for myself and then try my best to achieve them.	4.11	0.66
EI12 I would always encourage myself to try my best.	4.08	0.71
EI14 I am quite capable of controlling my own emotions.	4.03	0.62
EI13 I can control my temper so that I can handle difficulties rationally.	4.00	0.66
EI16 I have good control of my own emotions.	3.97	0.65
EI7 I am sensitive to the feelings and emotions of others	3.97	0.65
EI10 I always tell myself I am a competent person.	3.96	0.70
EI11 I am a self-motivating person.	3.95	0.72
EI5 I always know my friends' emotions from their behaviour.	3.94	0.64
EI15 I can always calm down quickly when I am very angry.	3.89	0.70
EI6 I am a good observer of others' emotions	3.86	0.68
EI8 I have good understanding of the emotions of people around me.	3.86	0.70

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation

4.2.7 *Employees' safety behaviour from a supervisor's perspective*

In Table 4-8, the results indicate that respondents agreed or strongly agreed with all employees' safety behaviour attributes. Respondents were most in agreement with the following employees' safety behaviour, which had mean scores over 3.89: *my subordinate has safety awareness at work* (LSB9), *my subordinate complies with safety rules* (LSB8) *and standard operational procedures* (LSB10), and *my subordinate does not neglect safety, even when in a rush* (LSB12). The result shows that managers or supervisors agreed their employees had safety awareness at work.

Table 4-8 The Relative Agreement of Employees' Safety Behaviour from a

Supervisor's Perspective

Employees' Safety Behaviour Attributes	Mean	S.D.
LSB9 My subordinate has safety awareness at work.	4.05	0.54
LSB8 My subordinate complies with safety rules and standard operational procedures.	4.01	0.67
LSB10 My subordinate does not neglect safety, even when in a rush.	3.97	0.72
LSB11 My subordinate wears personal protective equipment at work.	3.86	0.65
LSB12 My subordinate participates in setting safety goal.	3.81	0.75
LSB13 My subordinate actively provides safety improvement suggestions.	3.78	0.77
LSB14 My subordinate actively participates in safety meetings.	3.72	0.77

4.3 Perceptions of LMX, Safety Climate, OCB, Job Stress, and Emotional Intelligence According to Respondents' Characteristics

One-way analysis of variance (ANOVA) was performed to examine the differences of container terminal employees' perceptions of LMX, safety climate, OCB, job stress and emotional intelligence according to their characteristics. The results are displayed from Table 4-9 to Table 4-44. In addition, an ANOVA analysis to test perceived differences in the agreement of managers and employees according to their job titles, industry working experiences, tenures in current company, ages, educational levels, and firm sizes in terms of employee number.

4.3.1 The relative agreement of LMX according to respondents' characteristics

4.3.1.1 The Relative Agreement of LMX According to Respondents' Job Titles

Respondents were divided into four groups based on their job title: namely, director, manager, co-ordinator, and others. In Table 4-9, managers/assistant managers tended to agree or strongly agree with the item statement, *my supervisor is satisfied with my working performance* (LMX1), followed by *my supervisor understands my job problems and needs* (LMX2), *my supervisor recognises my*

potential (LMX3), *regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4), *my supervisor would defend and justify my decision if I was not present to do so* (LMX6), and *I have a good working relationship with my supervisor* (LMX7); these items received a mean score over 4.0. In contrast, *Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense* (LMX5) was rated as the least agreeable item, with a mean score below 4.0. A one-way ANOVA was performed to examine the difference between these four groups. Results revealed that *Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense* (LMX5), *My supervisor would defend and justify my decision if I was not present to do so* (LMX6) were significantly differed between various job titles. This research found that respondents those who had job titles of supervisor and manager/assistant manager had higher agreement than general employee and specialist.

Table 4-9 The Relative Agreement of LMX According to Respondent's Job Title

LMX Items	1 Manager/ Assistant manager (N=16)		2 Supervisor (N=114)		3 Specialist (N=41)		4 General employee (Tally, Frontline Staff) (N=153)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LMX1	4.25	0.86	3.88	0.57	4.00	0.63	3.88	0.67	2.01	0.11	
LMX2	4.00	0.73	3.99	0.49	4.00	0.77	3.82	0.77	1.68	0.17	
LMX3	4.00	1.03	3.96	0.50	4.10	0.54	3.90	0.78	1.00	0.39	
LMX4	4.00	1.03	4.25	0.56	3.90	0.83	4.06	0.83	2.75	0.04	
LMX5	3.50	1.15	4.01	0.60	3.10	0.70	3.31	0.97	19.53	0.00**	(2,3)(2,4)
LMX6	4.00	1.03	4.10	0.48	3.51	0.93	3.92	0.85	5.98	0.00**	(2,3)(3,4)
LMX7	4.00	1.03	4.11	0.56	3.90	0.54	4.14	0.80	1.31	0.27	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; [*] = $P < 0.05$; [**] = $P < 0.01$

4.3.1.2 *The relative agreement of LMX according to Respondent's Industry Experience*

Respondents were divided into five groups based on industry experience as follows: less than 5 years, 6–10 years, 11–15 years, 16–20 years, and 20 years or more. Table 4-10 indicates that respondents with less than 5 years of experience tended to agree most with *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4) (mean score of 3.97) and disagree with *Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense* (LMX5) (mean score below 3.5). For those who had 20 or more years of industry experience tended to agree with *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4) and *I have a good working relationship with my supervisor* (LMX7).

The result shown as the Table 4-10 that LMX items were scored differently according to respondent's degree of industry experience at the 0.05 significance level. For example, respondent scoring of the item *I have a good working relationship with my supervisor* (LMX7) has differed significantly between 'less than 5 years' and '6–10 years', as well as between 'less than 5 years' and '20 years or more'. Overall, senior employees will have higher quality of the relationship between leader and their employees than junior employees in container terminal operators.

Table 4-10 The Relative Agreement of LMX According to Respondent's

Industry Experience

LMX Items	1 Less than 5 (N=96)		2 6–10 (N=47)		3 11–15 (N=32)		4 16–20 (N=53)		5 20 and over (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean				
LMX1	3.67	0.57	4.06	0.53	3.75	0.67	3.92	0.65	4.13	0.67	7.86	0.00**	(1,2)(1,5)
LMX2	3.71	0.71	4.26	0.44	3.88	0.61	3.79	0.89	4.03	0.57	6.66	0.00**	(1,2)(1,5) (2,4)
LMX3	3.81	0.67	4.26	0.44	3.63	0.71	3.94	0.93	4.04	0.54	5.93	0.00**	(1,2)(2,3)
LMX4	3.97	0.73	4.26	0.44	3.88	0.79	4.09	1.02	4.25	0.71	2.88	0.02**	
LMX5	3.21	0.87	3.57	0.77	3.13	0.61	3.74	0.79	3.89	0.98	10.1	0.00**	(1,4)(1,5) (3,4)(3,5)
LMX6	3.52	0.82	4.26	0.44	3.63	0.71	4.11	0.85	4.19	0.64	15.6	0.00**	(1,2)(1,4) (1,5)(2,3) (3,5)
LMX7	3.90	0.70	4.34	0.48	3.88	0.79	4.11	0.73	4.23	0.72	5.17	0.00**	(1,2)(1,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.1.3 *The Relative Agreement of LMX According to Respondent's Tenure in Current Company*

Table 4-11 indicates significant differences in LMX scores according to the respondent's tenure in their current company. Overall, respondents who had worked for their current company for 6–10 years scored LMX items more favourably (mean scores over 4.1) than other groups. Respondents who had worked for their current companies for over 20 years showed strong agreement with *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4), *I have a good working relationship with my supervisor* LMX7, and *My supervisor would defend and justify my decision if I was not present to do so* (LMX6), which received mean scores over 4.1. Scheffe test results indicate significant difference in LMX scoring between respondents who had worked for the company for less than 5 years and those who had worked for the companies for 20 years or more. The result indicated that senior employees strongly agree that the quality of relationship between leader and employee depend

on helping behaviour, except for junior employees doesn't strongly agree.

Table 4-11 The Relative Agreement of LMX According to Respondent's Tenure in Current Company

LMX Items	1 Less than 5 years (N=101)		2 6–10 years (N=50)		3 11–15 years (N=41)		4 16–20 years (N=53)		5 20 and above years (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LMX1	3.68	0.56	3.98	0.59	3.90	0.70	4.08	0.68	4.05	0.66	5.37	0.00**	(1,4) (1,5)
LMX2	3.72	0.69	4.16	0.55	3.90	0.83	3.85	0.79	4.04	0.53	4.53	0.00**	(1,2) (1,5)
LMX3	3.82	0.65	4.16	0.55	3.80	0.75	4.02	0.93	4.00	0.54	2.85	0.02**	
LMX4	3.97	0.71	4.16	0.55	3.93	1.06	4.08	0.89	4.33	0.63	3.39	0.01**	(1,5)
LMX5	3.25	0.87	3.52	0.76	3.22	0.88	3.63	1.02	4.01	0.77	10.9	0.00**	(1,5) (2,5) (3,5)
LMX6	3.54	0.81	4.16	0.55	3.73	1.03	4.27	0.61	4.17	0.58	14.1	0.00**	(1,2) (1,4) (1,5) (3,5)
LMX7	3.91	0.69	4.30	0.61	3.80	0.75	4.29	0.71	4.21	0.68	6.34	0.00**	(1,2) (1,4) (2,3) (3,4) (3,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.1.4 *The Relative Agreement of LMX According to Respondent's Age*

Respondents were divided into five groups based on their ages: younger than 30 years, 31–40 years, 41–50 years, 51–60 years, and 61 years and above. Expect for *My supervisor understands my job problems and needs* (LMX2) and *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4), there are significant differences in the scoring of other five LMX items between various respondents' ages. Overall, Table 4-12 reveals that the senior employees have high quality relationship of LMX. In addition, the results reflect that junior employees who aged between 31 and 40 tended to strongly agree with *My supervisor is satisfied with my working performance* (LMX1), *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* (LMX4) and *I have a good working relationship with my*

supervisor (LMX7), whereas those in the '61 years and above' age group tended to strongly agree with *My supervisor is satisfied with my working performance* (LMX1) and *I have a good working relationship with my supervisor* (LMX7).

Table 4-12 The Relative Agreement of LMX According to Respondent's Age

LMX Items	1 younger than 30 (N=29)		2 31–40 (N=103)		3 41–50 (N=87)		4 51–60 (N=84)		5 61 and above (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LMX1	3.86	0.64	4.06	0.53	3.75	0.67	3.92	0.65	4.76	0.44	15.8	0.00**	(1,5) (2,5) (3,4) (3,5) (4,5)
LMX2	3.72	0.88	3.89	0.67	3.86	0.77	3.99	0.48	4.19	0.75	1.83	0.12	
LMX3	3.72	0.88	3.96	0.64	3.85	0.83	3.95	0.38	4.57	0.51	5.97	0.00**	(1,5) (2,5) (3,5) (4,5)
LMX4	4.00	0.76	4.03	0.81	4.08	0.85	4.19	0.57	4.38	0.81	1.37	0.25	
LMX5	3.14	0.64	3.14	0.85	3.77	0.8	3.96	0.59	3.43	1.63	14.8	0.00**	(1,3) (1,4) (2,3) (2,4)
LMX6	3.45	0.74	3.86	0.86	3.84	0.81	4.07	0.51	4.12	0.63	11.2	0.00**	(1,4) (1,5) (2,5) (3,5) (4,5)
LMX7	3.86	0.64	4.03	0.76	4.06	0.72	4.12	0.63	4.76	0.44	6.06	0.00**	(1,5) (2,5) (3,5) (4,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; *= $P < 0.05$; ** = $P < 0.01$

4.3.1.5 *The Relative Agreement of LMX According to Respondent's Educational Level*

Respondents were categorized into three groups according to their education levels: namely, high school degree or below, college/university, and master's degree and above. Table 4-13 reveals that there are significant differences in the scoring of all LMX items across respondent educational levels. Respondents in the 'high school degree or below' and 'master's degree and above' groups tended to score LMX7 highly (mean score of 4.3), followed by *My supervisor is satisfied with my working performance* (LMX1), *My supervisor understands my job problems and needs.* (LMX2), *My supervisor recognizes my potential* (LMX3), and *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems*

in my work (LMX4) (mean scores over 4.0). The 'college/university' group tended

to agree strongly with LMX4, which received mean scores over 4.0.

Table 4-13 The Relative Agreement of LMX According to Respondent's
Educational Level

LMX Attributes	1 High School or below (N=104)		2 College/ University (N=200)		3 Master and above (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LMX1	4.09	0.61	3.79	0.65	4.20	0.41	9.89	0.00**	(1,2) (2,3)
LMX2	4.08	0.49	3.80	0.76	4.20	0.41	7.77	0.00**	(1,2) (2,3)
LMX3	4.13	0.49	3.83	0.76	4.20	0.41	8.22	0.00**	(1,2)
LMX4	4.30	0.71	4.01	0.81	4.05	0.22	7.53	0.00**	(1,2)
LMX5	3.82	0.89	3.42	0.92	3.35	0.49	5.05	0.01**	(1,2)
LMX6	4.15	0.67	3.79	0.83	4.25	0.44	9.94	0.00**	(1,2) (2,3)
LMX7	4.35	0.67	3.93	0.71	4.40	0.50	14.9	0.00**	(1,2) (2,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; [*] = $P < 0.05$; [**] = $P < 0.01$

4.3.1.6 *The Relative Agreement of LMX According to Respondent's Firm Size*

The type of firm size was categorized based on the number of employees as

follows: 'less than 100', '101–200', and 'more than 200' employees. Table 4-14

indicates that the respondents' perceptions of *My supervisor understands my job*

problems and needs (LMX2), *My supervisor recognizes my potential* (LMX3), and

Regardless of how much formal authority my supervisor has built into his or her

position, my supervisor would use his or her power to help me solve problems in

my work (LMX4) are significant different according to the type of firm sizes. The

result found that respondents working for firm size with employee number 'more

than 200' people had higher agreement of LMX items than other two groups.

Table 4-14 The Relative Agreement of LMX According to Respondent's Firm Size in Terms of Employee Number

LMX Attributes	1 Less than 100 (N=17)		2 101-200 (N=188)		3 More than 200 (N=119)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LMX1	3.76	0.44	3.86	0.70	4.02	0.57	2.741	0.07	
LMX2	4.00	0.00	3.76	0.77	4.15	0.50	13.25	0.00**	(1,3)
LMX3	4.00	0.00	3.80	0.69	4.17	0.66	11.15	0.00**	(1,3)
LMX4	4.53	0.51	3.95	0.79	4.29	0.68	10.94	0.00**	(1,2)(2,3)
LMX5	3.53	0.51	3.49	0.97	3.61	0.84	0.63	0.54	
LMX6	3.82	1.33	3.96	0.71	3.90	0.79	0.42	0.66	
LMX7	3.53	0.87	4.07	0.73	4.20	0.62	7.05	0.00**	(1,2)(1,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; [*] = $P < 0.05$; [**] = $P < 0.01$

4.3.2 The Relative Agreement of Safety Climate According to Respondent's Characteristics

4.3.2.1 The Relative Agreement of Safety Climate According to Respondent's Job Title

Respondents were divided into four groups based on their job titles: namely, director, manager, co-ordinator, and others. Table 4-15 showed the items of *The safety training programs are helpful to prevent accidents* (SC10) and *My supervisor uses explanations (not just compliance) to get us to act safely* (SC13), most safety climate attributes are significantly different according to respondent's job title. General employee tended to agree or strongly agree with the item statement, *my company sets up a work safety rule* (SC3), followed by *my company announces safety policies* (SC1), *my company establishes a safety responsibility system* (SC2); these items received a mean score over 4.0. Overall, the results showed general employee have strongly agreed safety climate items comparing with other groups.

Safety Climate Items	Manager/ Assistant manager (N=16)		Supervisor (N=114)		Specialist (N=41)		General employee (Tally, Frontline Staff) (N=153)		F ratio	P value	Scheffe
	1		2		3		4				
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	4.00	0.73	4.40	0.73	4.00	0.63	4.32	0.58	5.07	0.00**	(2,3)(3,4)
SC2	4.25	0.86	4.34	0.70	3.98	0.65	4.28	0.68	2.87	0.04*	(2,3)
SC3	4.25	0.86	4.59	0.58	4.17	0.63	4.40	0.59	5.70	0.00**	(2,3)
SC4	3.75	0.86	4.09	0.77	3.49	0.68	4.22	0.72	11.48	0.00**	(2,3)(3,4)
SC5	4.25	0.86	4.14	0.73	3.78	0.61	4.18	0.72	3.66	0.01**	(3,4)
SC6	4.50	0.52	4.27	0.78	3.71	0.64	4.16	0.71	7.54	0.00**	(1,3)(2,3) (3,4)
SC7	4.25	0.86	4.13	0.93	3.78	0.61	4.27	0.65	4.63	0.00**	(3,4)
SC8	3.75	0.86	4.01	0.95	3.68	0.65	4.25	0.72	6.72	0.00**	(3,4)
SC9	4.00	1.03	4.01	0.87	3.78	0.61	4.22	0.71	4.13	0.01**	(3,4)
SC10	4.25	0.86	4.21	0.95	4.00	0.45	4.23	0.74	0.95	0.42	
SC11	4.50	0.52	4.15	0.73	3.90	0.54	4.17	0.65	3.46	0.02**	(1,3)
SC12	4.25	0.86	4.14	0.74	3.78	0.61	4.22	0.68	4.40	0.00**	(2,3)(3,4)
SC13	4.25	0.86	4.22	0.76	4.00	0.45	4.25	0.68	1.48	0.22	
SC14	4.00	1.03	4.21	0.77	3.59	0.67	4.22	0.72	8.61	0.00**	(2,3)(3,4)
SC15	4.00	0.73	3.97	0.97	3.68	0.65	4.19	0.78	4.38	0.00**	(3,4)
SC16	4.25	0.86	4.25	0.73	3.68	0.65	4.27	0.70	8.01	0.00**	(2,3)(3,4)
SC17	4.25	0.86	4.24	0.72	3.90	0.54	4.31	0.71	3.70	0.01**	(3,4)
SC18	3.75	0.86	4.25	0.71	3.71	1.01	4.11	0.80	5.69	0.00**	(2,3)(3,4)
SC19	4.25	0.86	4.16	0.78	3.68	0.65	4.20	0.77	5.29	0.00**	(2,3)(3,4)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.2.2 *The Relative Agreement of Safety Climate According to Respondent's Industry Experience*

Respondents were divided into five groups based on industry experience as follows: less than 5 years, 6–10 years, 11–15 years, 16–20 years, and 20 years or more. In Table 4-16, the results show that five safety climate items (*My company establishes a safety responsibility system* (SC2), *My company sets up a work safety rule* (SC3), *My company encourages workers' participation in safety decision-making* (SC5), *My company encourages workers to provide safety suggestion* (SC6), and *My supervisor refuses to ignore safety rules when work falls behind schedule* (SC14)) were scored differently according to respondent's degree of

industry experience at the 0.05 significance level. For example, respondent scoring of the item '*my company sets up a work safety rule*' (SC3) differed significantly between 'less than 5 years' and '6–10 years', as well as between 'less than 5 years' and '16-20 years'. This indicates that respondents' industry experience over 6 years strongly agree that their company sets up a work safety rule can affect safety climate in container terminal firms.

Table 4-16 The Relative Agreement of Safety Climate According to Respondent's Industry Experience

Safety Climate Items	1 Less than 5 (N=96)		2 6~10 (N=47)		3 11~15 (N=32)		4 16~20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	4.19	0.51	4.47	0.50	4.25	0.84	4.30	0.85	4.32	0.67	1.53	0.19	
SC2	4.06	0.71	4.47	0.50	4.25	0.84	4.40	0.77	4.29	0.65	3.60	0.01**	(1,2)
SC3	4.24	0.54	4.66	0.48	4.25	0.84	4.57	0.64	4.49	0.60	5.76	0.00**	(1,2)(1,4)
SC4	3.88	0.71	4.06	0.67	4.00	0.88	4.13	0.79	4.21	0.81	2.46	0.05*	
SC5	3.98	0.71	3.98	0.61	3.88	0.79	4.32	0.61	4.30	0.77	5.02	0.00**	(1,5)
SC6	4.03	0.61	4.02	0.87	4.00	0.72	4.49	0.64	4.22	0.80	4.49	0.00**	(1,4)(2,4)
SC7	4.05	0.65	4.36	0.67	4.13	0.79	4.32	0.75	4.09	0.92	2.03	0.09	
SC8	4.01	0.75	4.17	0.73	4.00	0.88	4.06	0.74	4.10	0.97	0.40	0.81	
SC9	3.97	0.72	4.34	0.67	4.00	0.88	4.15	0.69	4.05	0.90	2.01	0.09	
SC10	4.03	0.73	4.36	0.67	4.38	0.71	4.25	0.73	4.19	0.94	2.02	0.09	
SC11	4.02	0.54	4.32	0.66	4.13	0.61	4.26	0.71	4.13	0.76	2.11	0.08	
SC12	3.96	0.60	4.34	0.67	4.13	0.79	4.17	0.67	4.21	0.81	2.78	0.03*	
SC13	4.06	0.58	4.26	0.64	4.25	0.67	4.23	0.82	4.31	0.76	1.68	0.15	
SC14	3.92	0.69	4.26	0.64	4.00	0.88	4.23	0.82	4.26	0.81	3.33	0.01**	(1,5)
SC15	4.04	0.66	4.00	0.86	4.13	0.79	4.30	0.72	3.89	1.04	2.20	0.07	
SC16	4.00	0.63	4.26	0.77	4.13	0.79	4.32	0.73	4.30	0.77	2.80	0.03*	
SC17	4.16	0.65	4.26	0.64	4.13	0.79	4.34	0.73	4.27	0.76	0.84	0.50	
SC18	4.01	0.79	4.28	0.45	3.75	0.98	4.08	1.00	4.21	0.79	2.77	0.03*	
SC19	3.94	0.86	4.17	0.73	4.13	0.79	4.15	0.69	4.27	0.75	2.31	0.06	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.2.3 *The Relative Agreement of Safety Climate According to Respondent's Tenure in the Current Company*

Table 4-17 indicates 13 out of 19 safety climate attributes are significant differences according to the respondent's tenure in their current company. Overall, respondents who had worked for their current company over 20 years scored safety climate items more favourably (mean scores over 4.16) than other groups. Table 4-17 showed employee who possess over 20 years strong agreement with *My company announces safety policies* (SC1), *My company sets up a work safety rule*

(SC3), and *My supervisor uses explanations (not just compliance) to get us to act safely* (SC13), which received mean scores over 4.25. The result indicated that senior employees have strongly agree company safety policy, safety rule, and teach employees act safely.

Table 4-17 The Relative Agreement of Safety Climate According to
Respondent's Tenure in the Current Company

Safety Climate Items	1 Less than 5 (N=101)		2 6~10 (N=50)		3 11~15 (N=41)		4 16~20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	4.19	0.50	4.42	0.64	4.07	0.85	4.60	0.64	4.27	0.68	5.16	0.00**	(1,4)(3,4)
SC2	4.07	0.70	4.42	0.64	4.17	0.77	4.63	0.64	4.24	0.65	6.35	0.00**	(1,4)(3,4)(4,5)
SC3	4.24	0.53	4.60	0.64	4.39	0.67	4.63	0.64	4.46	0.61	4.92	0.00**	(1,2)(1,4)
SC4	3.88	0.70	3.98	0.71	3.88	0.95	4.42	0.65	4.19	0.78	5.49	0.00**	(1,4)(3,4)
SC5	3.98	0.69	3.90	0.65	4.10	0.70	4.44	0.65	4.25	0.79	5.33	0.00**	(1,4)(2,4)
SC6	4.03	0.59	3.94	0.89	4.10	0.70	4.63	0.64	4.20	0.77	7.29	0.00**	(1,4)(2,4)(3,4)(4,5)
SC7	4.05	0.64	4.26	0.75	4.17	0.77	4.54	0.65	4.01	0.94	4.56	0.00**	(1,4)(4,5)
SC8	4.01	0.73	4.08	0.78	4.07	0.85	4.25	0.73	4.02	0.99	0.77	0.55	
SC9	3.97	0.70	4.24	0.74	4.07	0.85	4.35	0.64	3.96	0.91	2.99	0.02*	
SC10	4.04	0.72	4.32	0.77	4.27	0.67	4.46	0.65	4.12	0.97	2.93	0.02*	
SC11	4.06	0.56	4.14	0.70	4.22	0.61	4.35	0.64	4.10	0.79	1.85	0.12	
SC12	4.00	0.62	4.16	0.71	4.20	0.75	4.35	0.64	4.14	0.82	2.15	0.07	
SC13	4.10	0.59	4.08	0.67	4.17	0.77	4.52	0.65	4.26	0.78	3.71	0.01**	(1,4)(2,4)
SC14	3.92	0.67	4.16	0.71	3.88	0.95	4.52	0.65	4.25	0.79	6.98	0.00**	(1,4)(3,4)
SC15	4.04	0.65	3.92	0.88	4.10	0.83	4.50	0.65	3.82	1.04	5.51	0.00**	(1,4)(2,4)(4,5)
SC16	4.00	0.62	4.16	0.82	4.20	0.75	4.52	0.65	4.25	0.79	4.47	0.00**	(1,4)
SC17	4.15	0.64	4.16	0.71	4.20	0.75	4.54	0.65	4.21	0.78	2.85	0.02*	(1,4)
SC18	4.01	0.77	4.18	0.56	3.61	1.02	4.33	0.86	4.24	0.79	6.00	0.00**	(2,3)(3,4)(3,5)
SC19	3.94	0.83	4.08	0.78	4.17	0.77	4.35	0.64	4.21	0.76	2.86	0.02*	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.2.4 *The Relative Agreement of Safety Climate According to Respondent's Age*

Safety climate attributes are found significant differences according to respondent's age as shown in Table 4-18 except item name *My company announces safety policies* (SC1). Overall, the results indicated that the senior employees have higher perceptions of safety climate compare with junior employees age 'young than 30'.

Table 4-18 The Relative Agreement of Safety Climate According to
Respondent's Age

Safety Climate Items	1 younger than 30 (N=29)		2 31~40 (N=103)		3 41~50 (N=87)		4 51~60 (N=84)		5 61 and above (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	4.14	0.35	4.32	0.56	4.25	0.82	4.29	0.69	4.57	0.51	1.47	0.21	
SC2	3.83	0.38	4.30	0.73	4.25	0.77	4.25	0.66	4.76	0.44	5.88	0.00**	(1,2)(1,5)
SC3	3.97	0.57	4.44	0.57	4.49	0.66	4.42	0.61	4.81	0.40	6.78	0.00**	(1,2)(1,3) (1,4)(1,5)
SC4	3.41	0.50	4.02	0.79	4.14	0.72	4.11	0.81	4.57	0.51	8.45	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)
SC5	3.69	0.47	3.97	0.79	4.24	0.61	4.17	0.76	4.76	0.44	9.30	0.00**	(1,3)(1,4) (1,5)(2,5) (3,5)(4,5)
SC6	3.72	0.45	4.02	0.71	4.45	0.66	4.02	0.81	4.76	0.44	12.48	0.00**	(1,3)(1,5) (2,3)(2,5) (3,4)(4,5)
SC7	3.55	0.51	4.24	0.68	4.30	0.78	3.98	0.86	4.76	0.44	10.92	0.00**	(1,2)(1,3) (1,5)(4,5)
SC8	3.28	0.70	4.15	0.69	4.15	0.79	4.04	0.95	4.57	0.51	10.11	0.00**	(1,2)(1,3) (1,4)(1,5)
SC9	3.41	0.91	4.19	0.66	4.10	0.70	3.98	0.86	4.76	0.44	11.36	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)(3,5) (4,5)
SC10	3.59	0.73	4.25	0.67	4.25	0.77	4.13	0.93	4.76	0.44	7.91	0.00**	(1,2)(1,3) (1,4)(1,5) (4,5)
SC11	4.00	0.53	4.16	0.64	4.16	0.71	4.06	0.70	4.57	0.51	2.91	0.02*	(4,5)
SC12	3.55	0.51	4.15	0.71	4.21	0.67	4.11	0.74	4.76	0.44	10.17	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)(3,5) (4,5)
SC13	3.72	0.45	4.16	0.64	4.29	0.78	4.23	0.70	4.76	0.44	7.82	0.00**	(1,3)(1,4) (1,5)(2,5) (4,5)
SC14	3.55	0.51	4.11	0.74	4.15	0.84	4.17	0.76	4.76	0.44	8.31	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)(3,5) (4,5)
SC15	3.55	0.51	4.02	0.79	4.30	0.70	3.83	1.05	4.57	0.51	8.46	0.00**	(1,3)(1,5) (3,4)(4,5)
SC16	3.69	0.71	4.11	0.74	4.30	0.70	4.21	0.71	4.76	0.44	8.03	0.00**	(1,3)(1,4) (1,5)(2,5) (4,5)
SC17	3.72	0.45	4.19	0.73	4.37	0.72	4.18	0.70	4.76	0.44	8.27	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)(4,5)
SC18	3.86	0.64	3.94	0.81	4.22	0.91	4.15	0.81	4.38	0.50	2.79	0.03**	
SC19	3.55	0.91	4.04	0.79	4.21	0.75	4.18	0.68	4.76	0.44	8.83	0.00**	(1,2)(1,3) (1,4)(1,5) (2,5)(4,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.2.5 *The Relative Agreement of Safety Climate According to Respondent's Educational Level*

Table 4-19 reveals that only *the safety training programs are helpful to prevent accidents* (SC10) and *My supervisor requires working safely when employees are tired or stressed* (SC15) of safety climate attributes are significant different according to respondent's educational level. These differences are only found between the groups of 'college or university' and 'master or above'. The research findings indicated that respondents from 'high school degree or below' and 'college or university' did not have the different perceptions of safety climate attributes.

Table 4-19 The Relative Agreement of Safety Climate According to Respondent's Educational Level

Safety Climate Items	1 High School or below (N=104)		2 College/University (N=200)		3 Master or above (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	4.27	0.77	4.30	0.62	4.40	0.50	0.33	0.72	
SC2	4.20	0.73	4.31	0.67	4.15	0.81	1.01	0.36	
SC3	4.50	0.59	4.40	0.60	4.40	0.88	1.01	0.36	
SC4	4.13	0.75	4.03	0.79	3.95	0.69	0.89	0.41	
SC5	4.23	0.66	4.08	0.76	3.95	0.69	2.08	0.13	
SC6	4.19	0.80	4.13	0.73	4.25	0.44	0.41	0.67	
SC7	4.08	0.81	4.18	0.75	4.40	0.88	1.62	0.20	
SC8	4.13	0.83	4.03	0.83	4.15	0.81	0.56	0.57	
SC9	4.00	0.71	4.12	0.82	4.15	0.81	0.81	0.44	
SC10	4.16	0.84	4.17	0.79	4.65	0.49	3.54	0.03**	(2,3)
SC11	4.08	0.69	4.16	0.67	4.40	0.50	2.03	0.13	
SC12	4.14	0.69	4.16	0.73	3.95	0.69	0.75	0.47	
SC13	4.31	0.74	4.18	0.71	4.00	0.00	2.12	0.12	
SC14	4.18	0.81	4.10	0.75	4.15	0.81	0.45	0.64	
SC15	4.00	1.01	4.11	0.71	3.55	1.05	4.21	0.02**	(2,3)
SC16	4.31	0.68	4.14	0.75	4.15	0.81	1.94	0.15	
SC17	4.34	0.69	4.18	0.74	4.25	0.44	1.78	0.17	
SC18	4.23	0.71	4.03	0.90	4.00	0.00	2.20	0.11	
SC19	4.13	0.72	4.14	0.82	3.95	0.69	0.54	0.59	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.2.6 *The Relative Agreement of Safety Climate According to Respondent's Firm Size*

In Table 4-20, most safety climate items differ significantly according to the different firm sizes in terms of employee number except *My supervisor makes sure employees receive all the safety equipment needed to do the job safely* (SC11). Overall, respondents from the large responding companies had higher perceptions of safety climate. It was not surprising because large firms will have more resources to emphasize their safety operations than small firms.

Table 4-20 The Relative Agreement of Safety Climate According to Respondent's Firm Size

Safety Climate Items	1 Less than 100 (N=104)		2 101-200 (N=200)		3 More than 200 (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
SC1	3.71	0.47	4.30	0.67	4.37	0.64	7.83	0.00**	(1,2) (1,3)
SC2	3.24	0.83	4.30	0.67	4.34	0.62	21.89	0.00**	(1,2) (1,3)
SC3	4.00	0.00	4.49	0.67	4.39	0.56	5.31	0.00**	(1,2) (1,3)
SC4	3.47	0.51	3.96	0.80	4.29	0.68	12.94	0.00**	(1,2) (1,3) (2,3)
SC5	3.76	0.44	4.04	0.78	4.30	0.62	7.29	0.00**	(1,3) (2,3)
SC6	3.53	0.51	4.10	0.81	4.34	0.57	10.74	0.00**	(1,2) (1,3) (2,3)
SC7	3.47	0.51	4.13	0.85	4.30	0.62	9.23	0.00**	(1,2) (1,3)
SC8	3.47	0.51	4.08	0.88	4.13	0.75	4.97	0.00**	(1,2) (1,3)
SC9	3.47	0.51	4.06	0.84	4.20	0.68	6.83	0.00**	(1,2) (1,3)
SC10	3.71	0.47	4.19	0.91	4.28	0.60	3.93	0.02*	(1,3)
SC11	4.29	0.47	4.07	0.72	4.24	0.59	2.58	0.08	
SC12	3.76	0.44	4.07	0.76	4.29	0.63	6.10	0.00**	(1,3) (2,3)
SC13	3.71	0.47	4.13	0.75	4.41	0.57	11.38	0.00**	(1,2) (1,3) (2,3)
SC14	3.24	0.44	4.07	0.82	4.34	0.63	17.69	0.00**	(1,2) (1,3) (2,3)
SC15	3.76	0.44	3.86	0.95	4.37	0.58	15.58	0.00**	(1,3) (2,3)
SC16	3.76	0.44	4.12	0.81	4.37	0.58	7.65	0.00**	(1,3) (2,3)
SC17	4.00	0.71	4.14	0.76	4.41	0.59	6.55	0.00**	(1,3) (2,3)
SC18	3.53	0.87	4.00	0.88	4.32	0.62	10.32	0.00**	(1,3) (2,3)
SC19	3.24	0.44	4.09	0.84	4.31	0.61	16.01	0.00**	(1,2) (1,3) (2,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.3 The Relative Agreement of OCB According to Respondent's Characteristics

4.3.3.1 The Relative Agreement of OCB According to Respondent's Job Title

Table 4-21 indicates that only *I help co-worker who has been absent* (OCB1), *I actively help new employees* (OCB5), *I actively forward work safety-related information to co-workers* (OCB6), and *I will give early notice when I unable to work* (OCB7) differed significantly according to respondent's job title. Overall, respondents who had positions of manger or assistant manage had high level of OCB awareness than supervisor and general employee. Nevertheless, most OCB attributes were not found significant different between the various respondents' job titles.

Table 4-21 The Relative Agreement of OCB According to Respondent's Job Title

OCB Items	1 Manager/ Assistant manager (N=16)		2 Supervisor (N=114)		3 Specialist (N=41)		4 General Employee (N=153)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	3.75	0.86	4.29	0.46	4.10	0.54	4.16	0.74	3.842	0.010**	(1,2)
OCB2	4.25	0.86	4.32	0.47	4.20	0.60	4.19	0.72	1.058	0.367	
OCB3	4.00	0.73	4.23	0.50	3.90	0.54	4.10	0.79	2.656	0.049*	
OCB4	4.00	0.73	4.20	0.54	3.90	0.70	4.13	0.73	2.226	0.085	
OCB5	4.50	0.52	4.39	0.49	4.10	0.54	4.16	0.59	6.359	0.000**	(1,3) (1,4)
OCB6	4.50	0.52	4.46	0.50	4.29	0.46	4.22	0.62	4.672	0.003**	(1,4)
OCB7	4.25	0.45	4.55	0.50	4.51	0.51	4.29	0.60	6.005	0.001**	(1,4)
OCB8	4.00	1.03	4.18	0.52	4.39	0.49	4.07	0.81	2.575	0.054	
OCB9	4.00	0.73	3.64	0.98	3.49	0.68	3.82	0.78	2.639	0.050*	
OCB10	4.25	0.86	4.20	0.58	3.98	0.79	4.07	0.66	1.693	0.168	
OCB11	4.50	0.52	4.42	0.50	4.29	0.46	4.30	0.69	1.368	0.253	
OCB12	4.50	0.52	4.42	0.50	4.29	0.46	4.35	0.62	0.907	0.438	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.3.2 The Relative Agreement of OCB According to Respondent's Industry Experiences

Table 4-22 shows that six OCB items differed significantly according to respondent industry experience, including *I help co-worker who has been absent*

(OCB1), *I actively help new employees* (OCB5), *I actively forward work safety-related information to co-workers* (OCB6), *I do not take undeserved work break at work* (OCB8), *I protect company's equipment and property* (OCB11), and *I adhere to formal rules in order to maintain an order in the company* (OCB12). Overall, respondents who had high industry experience have higher OCB awareness than those who had low industry experience. For example, respondents' industry experience which over 20 years strongly agree to help co-workers who has been absent (OCB1), actively help new employees (OCB5), forward work safety-related information to co-workers (OCB6) compare with respondents which industry experience less than 5 years.

Table 4-22 The Relative Agreement of OCB According to Respondent's Industry Experience

OCB Items	1 Less than 5 (N=96)		2 6–10 (N=47)		3 11–15 (N=32)		4 16–20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	4.01	0.64	4.17	0.56	4.13	0.79	4.23	0.80	4.34	0.48	3.46	0.01**	(1,5)
OCB2	4.13	0.60	4.26	0.44	4.13	0.79	4.25	0.81	4.39	0.57	2.34	0.06	
OCB3	4.14	0.67	4.17	0.56	4.13	0.61	4.09	0.84	4.07	0.65	0.21	0.93	
OCB4	4.04	0.68	4.17	0.56	3.88	0.79	4.23	0.70	4.20	0.63	2.16	0.07	
OCB5	4.08	0.50	4.26	0.44	4.13	0.61	4.42	0.75	4.36	0.48	4.94	0.00**	(1,4)(1,5)
OCB6	4.21	0.50	4.17	0.56	4.13	0.61	4.42	0.63	4.53	0.50	6.92	0.00**	(1,5)
OCB7	4.31	0.55	4.26	0.44	4.50	0.72	4.57	0.64	4.46	0.50	3.09	0.02*	
OCB8	3.99	0.66	4.09	0.78	4.13	0.79	4.40	0.84	4.21	0.56	3.21	0.01**	(1,4)
OCB9	3.67	0.80	3.45	0.50	3.63	0.71	3.91	1.08	3.84	0.90	2.60	0.04*	
OCB10	4.02	0.54	3.98	0.74	4.00	0.72	4.30	0.61	4.21	0.72	2.80	0.03*	
OCB11	4.14	0.54	4.34	0.48	4.50	0.72	4.49	0.64	4.45	0.58	5.31	0.00**	(1,4)(1,5)
OCB12	4.22	0.51	4.26	0.44	4.50	0.72	4.49	0.64	4.49	0.50	4.62	0.00**	(1,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.3.3 *The Relative Agreement of OCB According to Respondent's Tenure in the Current Company*

In Table 4-23, most OCB items differed significantly according to respondent's tenure in their current companies except for *I actively help supervisor*

even he or her was not asked (OCB3), *I take time to listen co-workers' problems and worries* (OCB4), and *I do not waste office hours on personal phone conversations* (OCB9) . The results indicate that those who had worked for their current company for less than five years tended to strongly agree with *I will give early notice when I unable to work* (OCB7), followed by *my supervisor uses explanations (not just compliance) to get us to act safely* (OCB12), and *I actively forward work safety-related information to co-workers* (OCB6), which received mean scores over 4.2). Respondent's tenure over 16 years strongly agree to help their coworkers in work and maintain company property compare with respondent's tenure less than 10 years.

Table 4-23 The Relative Agreement of OCB According to Respondent's Tenure in the Current Company

OCB Items	1 Less than 5 (N=101)		2 6–10 (N=50)		3 11–15 (N=41)		4 16–20 (N=53)		5 More than 20 years (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	4.01	0.62	4.08	0.63	4.29	0.64	4.25	0.84	4.35	0.48	4.06	0.00**	(1,5)
OCB2	4.12	0.59	4.16	0.55	4.20	0.75	4.27	0.84	4.44	0.50	3.36	0.01**	(1,5)
OCB3	4.13	0.66	4.08	0.63	4.00	0.63	4.19	0.91	4.13	0.58	0.49	0.74	
OCB4	4.04	0.66	4.08	0.63	4.00	0.77	4.25	0.73	4.23	0.59	1.74	0.14	
OCB5	4.08	0.48	4.16	0.55	4.29	0.46	4.46	0.77	4.37	0.49	5.68	0.00**	(1,4) (1,5)
OCB6	4.20	0.49	4.08	0.63	4.29	0.46	4.46	0.65	4.56	0.50	8.72	0.00**	(1,5) (2,4) (2,5)
OCB7	4.31	0.54	4.22	0.58	4.61	0.49	4.52	0.65	4.48	0.50	4.51	0.00**	(2,3)
OCB8	3.99	0.64	4.00	0.81	4.41	0.67	4.33	0.86	4.19	0.57	4.35	0.00**	(1,3)
OCB9	3.68	0.79	3.40	0.49	3.93	0.85	3.79	1.07	3.82	0.91	2.88	0.02*	
OCB10	4.02	0.53	3.90	0.76	4.00	0.77	4.33	0.63	4.29	0.65	5.05	0.00**	(2,4) (2,5)
OCB11	4.14	0.53	4.30	0.61	4.61	0.49	4.44	0.65	4.46	0.59	6.73	0.00**	(1,3) (1,5)
OCB12	4.22	0.50	4.22	0.58	4.61	0.49	4.44	0.65	4.51	0.50	6.66	0.00**	(1,3) (1,5) (2,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; $^* = P < 0.05$; $^{**} = P < 0.01$

4.3.3.4 *The Relative Agreement of OCB According to Respondent's Age*

Most OCB items differed significantly according to respondent's age except for *I help co-worker who has heavy workloads* (OCB2) and *I will give early notice when I unable to work* (OCB7) (see Table 4-24). The result reveals that

respondent's age over 60 years old had strongly agreement of OCB awareness than other groups.

Table 4-24 The Relative Agreement of OCB According to Respondent's Age

OCB Items	1 Less than 30 (N=29)		2 31–40 (N=103)		3 41–50 (N=87)		4 51–60 (N=84)		5 More than 60 years (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	3.59	0.50	4.22	0.63	4.16	0.78	4.30	0.46	4.38	0.50	8.20	0.00**	(1,2)(1,3)(1,4)(1,5)
OCB2	4.00	0.53	4.30	0.54	4.11	0.81	4.35	0.48	4.38	0.80	3.00	0.02*	
OCB3	3.72	0.45	4.25	0.65	4.14	0.77	4.05	0.58	4.14	0.79	3.89	0.00**	(1,2)
OCB4	3.72	0.45	4.14	0.66	4.21	0.79	4.08	0.59	4.38	0.50	3.93	0.00**	(1,3)(1,5)
OCB5	3.86	0.35	4.18	0.56	4.34	0.64	4.29	0.45	4.57	0.51	6.75	0.00**	(1,3)(1,4)(1,5)
OCB6	3.86	0.64	4.26	0.52	4.34	0.57	4.48	0.50	4.57	0.51	8.44	0.00**	(1,2)(1,3)(1,4)(1,5)
OCB7	4.17	0.66	4.34	0.55	4.45	0.59	4.54	0.50	4.38	0.50	2.92	0.02*	
OCB8	3.59	0.91	4.14	0.61	4.30	0.82	4.05	0.46	4.76	0.44	11.26	0.00**	(1,2)(1,3)(1,4)(1,5)(2,5)(4,5)
OCB9	3.28	0.45	3.63	0.71	3.82	1.02	3.68	0.84	4.57	0.51	8.61	0.00**	(1,3)(1,5)(2,5)(3,5)(4,5)
OCB10	3.69	0.71	4.05	0.62	4.24	0.68	4.10	0.55	4.57	0.81	6.99	0.00**	(1,3)(1,5)(2,5)
OCB11	4.00	0.53	4.31	0.61	4.40	0.66	4.37	0.49	4.76	0.44	5.66	0.00**	(1,3)(1,5)(2,5)
OCB12	3.86	0.35	4.35	0.55	4.49	0.59	4.37	0.49	4.76	0.44	10.95	0.00**	(1,2)(1,3)(1,4)(1,5)(2,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.3.5 *The Relative Agreement of OCB According to Respondent's Educational Level*

Table 4-25 reveals that there are only significant differences in *I actively help supervisor even he or her was not asked* (OCB3) and *I adhere to formal rules in order to maintain an order in the company* (OCB12) items according to respondents' educational levels. Overall, the result show that respondent's educational level college including above strongly agree to help their coworkers and maintain company property compare with respondent's educational level in high school or below.

Table 4-25 The Relative Agreement of OCB According to Respondent's
Educational Level

OCB Items	1 High School or below (N=104)		2 College/ University (N=200)		3 Master including above (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	3.59	0.50	4.22	0.63	4.16	0.78	2.11	0.12	
OCB2	4.00	0.53	4.30	0.54	4.11	0.81	0.95	0.39	
OCB3	3.72	0.45	4.25	0.65	4.14	0.77	3.90	0.02*	(1,3)
OCB4	3.72	0.45	4.14	0.66	4.21	0.79	3.36	0.04*	
OCB5	3.86	0.35	4.18	0.56	4.34	0.64	0.77	0.46	
OCB6	3.86	0.64	4.26	0.52	4.34	0.57	0.37	0.69	
OCB7	4.17	0.66	4.34	0.55	4.45	0.59	4.05	0.02*	
OCB8	3.59	0.91	4.14	0.61	4.30	0.82	8.13	0.00	
OCB9	3.28	0.45	3.63	0.71	3.82	1.02	0.15	0.86	
OCB10	3.69	0.71	4.05	0.62	4.24	0.68	0.80	0.45	
OCB11	4.00	0.53	4.31	0.61	4.40	0.66	2.96	0.05*	
OCB12	3.86	0.35	4.35	0.55	4.49	0.59	7.09	0.00**	(1,2)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; $^* = P < 0.05$; $^{**} = P < 0.01$

4.3.3.6 *The Relative Agreement of OCB According to Firm Size*

In Table 4-26, 7 out of 12 OCB attributes differed significantly according to firm size in terms of employee number. Overall, respondents from the large size of companies had strongly agreement of OCB awareness than small and medium size companies. Table 4-26 indicates that respondents working for firms with 'more than 200' strongly agreed with the OCB items, *I will give early notice when I unable to work* (OCB7) and *I adhere to formal rules in order to maintain an order in the company* (OCB12); followed by *I help co-worker who has heavy work-loads.* (OCB2), *I protect company's equipment and property* (OCB11), *I actively forward work safety-related information to co-workers* (OCB6), *I help co-worker who has been absent* (OCB1) and *I do not take undeserved break at work* (OCB8) (mean scores over 4.3).

Table 4-26 The Relative Agreement of OCB According to Respondent's Firm Size

OCB Items	1 Less than 100 (N=17)		2 101-200 (N=188)		3 More than 200 (N=119)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
OCB1	4.00	0.00	4.10	0.71	4.33	0.54	5.36	0.01**	(2,3)
OCB2	4.00	0.00	4.16	0.69	4.39	0.56	6.22	0.00**	(2,3)
OCB3	4.24	0.44	3.99	0.72	4.29	0.59	8.08	0.00**	(2,3)
OCB4	3.76	0.44	4.09	0.70	4.23	0.62	4.26	0.01**	(1,3)
OCB5	4.00	0.00	4.24	0.60	4.29	0.53	2.10	0.12	
OCB6	4.00	0.00	4.33	0.63	4.36	0.48	3.11	0.05*	(1,3)
OCB7	4.53	0.51	4.38	0.60	4.44	0.50	0.83	0.44	
OCB8	4.29	0.85	4.03	0.73	4.32	0.61	6.89	0.00**	(2,3)
OCB9	4.06	0.75	3.74	0.82	3.65	0.91	1.85	0.16	
OCB10	3.76	0.44	4.04	0.70	4.29	0.58	7.89	0.00**	(1,3)(2,3)
OCB11	4.29	0.85	4.35	0.60	4.37	0.55	0.14	0.87	
OCB12	4.53	0.51	4.35	0.60	4.40	0.49	1.07	0.35	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.4 The Relative Agreement of Job Stress According to Respondent's Characteristics

4.3.4.1 *The Relative Agreement of Job Stress According to Respondent's Job Title*

The scoring of job stress items differed significantly according to respondent's job title except for JS2 and JS4 (see Table 4-27). The result shows that respondent's job title in manager/ assistant manager has high level job stress compare with others that general employees tended to agree with the items, *my job requires a high level of responsibility* (JS9) and *my job requires a high level of accountability* (JS10), which received mean scores above 4.0. It is not surprising that managers/assistant managers indicated high level degrees of job stress than supervisors and general employees.

Table 4-27 The Relative Agreement of Job Stress According to Respondent's Job Title

JS Items	Manager/ Assistant manager (N=16)		Supervisor (N=114)		Specialist (N=41)		General employee (N=153)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	4.50	0.52	3.86	0.68	3.51	0.51	3.76	0.89	6.73	0.00**	(1,2) (1,3) (1,4)
JS2	4.00	0.73	3.54	0.80	3.39	0.80	3.53	0.84	2.15	0.09	
JS3	4.25	0.45	4.07	0.47	3.88	0.71	3.80	0.82	4.70	0.00**	(1,4)
JS4	4.25	0.86	3.84	0.74	4.00	0.89	3.95	0.72	1.63	0.18	
JS5	4.50	0.52	3.68	0.68	3.90	0.54	3.56	1.04	6.89	0.00**	(1,2) (1,4)
JS6	4.25	0.86	3.99	0.71	4.20	0.60	3.71	0.85	6.60	0.00**	(2,4) (3,4)
JS7	4.75	0.45	4.03	0.47	4.39	0.49	3.88	0.77	14.33	0.00**	(1,2) (1,4) (2,3) (3,4)
JS8	4.50	0.52	3.89	0.63	3.90	0.83	3.84	0.84	3.61	0.01**	(1,2) (1,4)
JS9	4.75	0.45	4.24	0.43	4.39	0.49	4.37	0.67	4.39	0.00**	(1,2)
JS10	4.75	0.45	4.15	0.36	4.00	0.63	4.08	0.79	6.05	0.00**	(1,2) (1,3) (1,4)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.4.2 *The Relative Agreement of Job Stress According to Respondent's Industry Experience*

In Table 4-28, most job stress items differed significantly according to respondent's industry experience except *My job requires a high level of accountability* (JS10). Overall, the results indicated that those who had industry experience of 11-15 years tend to agree with high level job stress than other groups. The result indicates that respondent's industry experience over 11 years has high level job stress compare with respondent's industry experience less than 5 years.

Table 4-28 The Relative Agreement of Job Stress According to Respondent's Industry Experience

JS Items	1 Less than 5 (N=96)		2 6–10 (N=47)		3 11–15 (N=32)		4 16–20 (N=53)		5 More than 20 years (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	3.63	0.85	3.30	0.62	4.13	0.79	3.81	0.74	4.11	0.63	12.86	0.00**	(1,3) (1,5) (2,3) (2,4) (2,5)
JS2	3.26	0.84	3.19	0.58	3.75	0.84	3.77	0.70	3.78	0.84	7.04	0.00**	(1,4) (1,5) (2,3) (2,4) (2,5)
JS3	3.74	0.78	3.66	0.64	4.00	0.51	4.21	0.57	4.06	0.68	11.31	0.00**	(1,4) (1,5) (2,4) (2,5)
JS4	3.81	0.70	3.74	0.74	4.13	0.61	4.25	0.59	3.92	0.89	6.86	0.00**	(1,4) (2,4)
JS5	3.22	0.96	3.83	0.82	4.00	0.72	3.94	0.63	3.84	0.81	3.31	0.00**	(1,2) (1,3) (1,4) (1,5)
JS6	3.55	0.81	3.91	0.65	4.13	0.61	4.28	0.66	3.95	0.84	0.00	0.00**	(1,3) (1,4) (1,5)
JS7	3.81	0.65	3.91	0.78	4.38	0.71	4.23	0.58	4.10	0.59	0.00	0.00**	(1,3) (1,4) (1,5) (2,3)
JS8	3.71	0.79	3.74	0.94	4.13	0.79	3.92	0.62	4.07	0.67	0.00	0.00**	(1,5) (2,3)
JS9	4.39	0.57	4.09	0.65	4.50	0.72	4.38	0.49	4.36	0.48	0.00	0.01**	(2,3)
JS10	4.01	0.73	4.00	0.83	4.25	0.67	4.30	0.46	4.17	0.50	0.00	0.04*	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.4.3 *The Relative Agreement of Job Stress According to Respondent's Tenure in the Current Company*

Respondents were categorised into five groups according to their tenure in current company. Most job stress items differed significantly according to respondents' tenure at their current companies except for *My job must multitask different assigned jobs at the same time* (JS8) (see Table 4-29). The result shows that respondent's tenure over 11 years has high level job stress compare with respondent's tenure less than 5 years. Table 4-29 indicates that those who had worked for their current company over 20 years tended to agree with the following items, which received scores above 4.0: *my job requires a high level of responsibility* (JS9), *my job requires a high level of accountability* (JS10), *my job must complete a lot of work* (JS1), *my job must multitask different assigned jobs at the same time* (JS8), and *my job must balance several factors at once* (JS7).

Table 4-29 The Relative Agreement of Job Stress According to Respondent's
Tenure in the Current Company

JS Items	1 Less than 5 (N=96)		2 6–10 (N=47)		3 11–15 (N=32)		4 16–20 (N=53)		5 More than 20 years (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	3.61	0.85	3.40	0.73	4.10	0.54	3.88	0.84	4.08	0.64	9.96	0.00**	(1,3) (1,5) (2,3) (2,4) (2,5)
JS2	3.28	0.84	3.12	0.63	4.10	0.54	3.75	0.73	3.70	0.85	14.12	0.00**	(1,3) (1,4) (1,5) (2,3) (2,4) (2,5)
JS3	3.74	0.77	3.62	0.64	4.29	0.46	4.23	0.59	3.98	0.66	10.38	0.00**	(1,3) (1,4) (2,3) (2,4)
JS4	3.82	0.68	3.76	0.72	4.41	0.67	4.17	0.56	3.81	0.88	7.60	0.00**	(1,3) (2,3) (3,5)
JS5	3.26	0.96	3.76	0.82	4.00	0.63	4.02	0.73	3.82	0.81	10.81	0.00**	(1,2) (1,3) (1,4) (1,5)
JS6	3.57	0.79	3.84	0.68	4.29	0.64	4.31	0.69	3.89	0.81	11.36	0.00**	(1,3) (1,4) (2,4) (4,5)
JS7	3.82	0.64	3.84	0.79	4.59	0.50	4.25	0.60	4.02	0.56	13.55	0.00**	(1,3) (1,4) (2,3) (2,4) (3,5)
JS8	3.72	0.78	3.68	0.94	4.10	0.70	4.08	0.65	4.04	0.68	4.55	0.00**	
JS9	4.38	0.56	4.06	0.74	4.59	0.50	4.42	0.50	4.32	0.47	5.53	0.00**	(1,2) (2,3) (2,4)
JS10	4.01	0.71	3.92	0.85	4.29	0.46	4.42	0.50	4.14	0.49	5.46	0.00**	(1,4) (2,4)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.4.4 *The Relative Agreement of Job Stress According to Respondent's Age*

Table 4-30 shows that job stress attributes were significant differences between different respondents' ages. The results reflected that the older of respondent the more higher job stress. Results also indicate that respondents above the age of 60 tended to strongly agree with the following items, which scored above 4.7: *my job requires a high level of responsibility* (JS9), *my job requires a high level of accountability* (JS10), *my job must complete a lot of work* (JS1), *my job must multitask different assigned jobs at the same time* (JS8), and *I have to work at a rapid pace to complete all my tasks* (JS4).

Table 4-30 The Relative Agreement of Job Stress According to Respondent's Age

JS Items	1 Young than 30 (N=29)		2 31–40 (N=103)		3 41–50 (N=87)		4 51–60 (N=84)		5 More than 60 years old (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	3.45	0.51	3.73	0.84	3.69	0.75	3.89	0.71	4.76	0.44	11.61	0.00**	(1,5) (2,5) (3,5) (4,5)
JS2	2.72	0.70	3.53	0.67	3.54	0.82	3.56	0.81	4.57	0.51	18.79	0.00**	(1,2) (1,3) (1,4) (1,5) (2,5) (3,5) (4,5)
JS3	3.55	0.51	3.87	0.62	4.05	0.73	3.85	0.74	4.52	0.60	7.53	0.00**	(1,3) (1,5) (2,5) (4,5)
JS4	3.59	0.73	3.98	0.63	4.01	0.77	3.71	0.80	4.76	0.44	11.11	0.00**	(1,5) (2,5) (3,5) (4,5)
JS5	3.31	0.89	3.63	0.95	3.77	0.79	3.58	0.75	4.57	0.81	7.85	0.00**	(1,5) (2,5) (3,5) (4,5)
JS6	3.31	0.47	3.88	0.83	3.99	0.71	3.90	0.82	4.38	0.80	6.64	0.00**	(1,2) (1,3) (1,4) (1,5)
JS7	3.72	0.45	4.01	0.73	4.20	0.59	3.88	0.67	4.57	0.51	7.91	0.00**	(1,3) (1,5) (2,5) (3,4) (4,5)
JS8	3.45	0.91	3.88	0.84	3.95	0.59	3.85	0.74	4.57	0.51	7.22	0.00**	(1,3) (1,5) (2,5) (3,5) (4,5)
JS9	4.00	0.53	4.46	0.57	4.34	0.57	4.23	0.52	4.76	0.44	7.97	0.00**	(1,2) (1,5) (3,5) (4,5)
JS10	3.59	0.91	4.19	0.64	4.24	0.61	3.95	0.41	4.76	0.44	14.68	0.00**	(1,2) (1,3) (1,5) (2,5) (3,4) (3,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.4.5 *The Relative Agreement of Job Stress According to Respondent's Educational Level*

Respondents were divided into three groups according to their education levels: namely, high school degree or below, college/university, and master's degree and above. As shown in Table 4-31, results indicated that respondents who held a master degree or above tended to agree with the following items, which received scores above 4.40: *my job requires a high level of responsibility* (JS9), and *my job requires a high level of accountability* (JS10). The result show that respondent's educational level over college/ university degree has high level job stress compare with respondent's high school or below degree.

Table 4-31 The Relative Agreement of Job Stress According to Respondent's

| JS Items | Educational Level | | | | | | F ratio | P value | Scheffe |
| | 1 High School or below (N=104) | | 2 College/ University (N=200) | | 3 Master or above (N=20) | | | | |
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	3.76	0.73	3.80	0.82	4.05	0.69	1.15	0.32	(1,2)
JS2	3.30	0.80	3.68	0.83	3.35	0.59	8.28	0.00**	(1,2)
JS3	3.75	0.82	4.04	0.63	3.75	0.44	6.57	0.00**	(1,2)
JS4	3.74	0.85	4.01	0.72	4.20	0.41	5.79	0.00**	(1,2) (1,3)
JS5	3.55	0.88	3.73	0.89	4.05	0.69	3.24	0.04*	
JS6	3.85	0.79	3.89	0.80	4.30	0.66	2.84	0.06	
JS7	4.07	0.66	4.01	0.70	4.20	0.41	0.92	0.40	
JS8	3.87	0.72	3.89	0.82	4.20	0.41	1.67	0.19	
JS9	4.35	0.55	4.34	0.59	4.40	0.50	0.10	0.91	
JS10	4.08	0.57	4.13	0.69	4.40	0.50	2.10	0.12	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.4.6 *The Relative Agreement of Job Stress According to Respondent's Firm Size*

Table 4-32 showed *My job must complete a lot of work* (JS1) and *My job must work very hard* (JS2) that were found significant differed from different firm size in terms of employee number. Respondents working for firms employing 101–200 people tended to agree with the following items, which scored above 4.0: *My job requires a high level of responsibility* (JS9), *my job requires a high level of accountability* (JS10), and *my job must complete a lot of work* (JS1). The result indicate that respondent's firm size less than 100 employees had high level job stress compared with respondent's firm size over 100 employees.

Table 4-32 The Relative Agreement of Job Stress According to Respondent's Firm Size

JS Items	Less than 100 (N=104)		101–200 (N=200)		More than 200 (N=20)		F ratio	P value	Scheffe
	1		2		3				
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
JS1	3.06	0.75	4.00	0.75	3.60	0.74	19.684	0.000**	(1,2) (1,3) (2,3)
JS2	3.53	0.51	3.64	0.83	3.38	0.83	3.706	0.026*	(2,3)
JS3	3.76	0.44	3.91	0.72	3.97	0.70	0.672	0.511	
JS4	4.29	0.85	3.94	0.78	3.87	0.71	2.319	0.100	
JS5	3.29	0.85	3.79	0.82	3.59	0.95	3.734	0.025*	
JS6	3.53	0.51	3.88	0.84	3.98	0.74	2.604	0.076	
JS7	4.00	0.71	3.97	0.67	4.14	0.67	2.369	0.095	
JS8	4.00	NO.	3.89	0.74	3.89	0.83	0.157	0.855	
JS9	4.24	0.44	4.30	0.62	4.44	0.50	2.522	0.082	
JS10	4.00	0.71	4.06	0.68	4.24	0.58	3.188	0.043*	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.5 The Relative Agreement of Emotional Intelligence According to Respondent's Characteristics

4.3.5.1 The Relative Agreement of Emotional Intelligence According to Respondent's Job Title

The scores of EI items differed significantly according to respondent job titles except for *I always set goals for myself and then try my best to achieve them* (EI9) and *I would always encourage myself to try my best* (EI12) (see Table 4-33). General employees tended to agree with the following emotional intelligence items, which received mean scores over 4.2: *I have good understanding of my own emotion* (EI2), *I always know whether or not I am happy* (EI4), and *I have a good sense of why I have certain feelings most of the time* (EI1). The result showed that managers/assistant managers had higher emotional intelligence than general employees.

Table 4-33 The Relative Agreement of Emotional Intelligence According to
Respondent's Job Title

EI Items	1 Manager/ Assistant manager (N=16)		2 Supervisor (N=114)		3 Specialist (N=41)		4 General employee (N=153)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	4.75	0.45	3.95	0.49	4.29	0.46	4.21	0.57	14.23	0.00**	(1,2) (1,3) (1,4)
EI2	4.75	0.45	3.94	0.64	4.29	0.46	4.27	0.60	12.89	0.00**	(1,2) (1,4)
EI3	4.75	0.45	3.98	0.53	4.29	0.46	4.18	0.60	10.80	0.00**	(1,2) (1,4)
EI4	4.50	0.52	3.84	0.78	4.20	0.60	4.25	0.67	9.61	0.00**	(1,2) (2,4)
EI5	3.75	0.86	3.77	0.56	3.90	0.54	4.10	0.65	6.93	0.00**	(2,4)
EI6	4.00	1.03	3.73	0.60	3.90	0.70	3.93	0.69	2.21	0.09	(2,4)
EI7	4.00	0.73	3.83	0.61	4.10	0.70	4.03	0.65	2.63	0.05*	
EI8	4.00	0.73	3.67	0.69	4.00	0.63	3.95	0.71	4.57	0.00**	
EI9	4.25	0.86	4.04	0.50	4.12	0.84	4.15	0.68	0.82	0.48	
EI10	4.25	0.86	3.83	0.61	3.71	0.90	4.08	0.65	5.85	0.00**	(2,4) (3,4)
EI11	4.25	0.86	3.79	0.57	3.71	0.90	4.11	0.70	7.38	0.00**	(2,4) (3,4)
EI12	4.25	0.86	3.99	0.70	4.00	0.77	4.14	0.68	1.49	0.22	
EI13	4.50	0.52	3.91	0.60	3.80	0.60	4.07	0.70	5.76	0.00**	(1,2) (1,3)
EI14	4.50	0.52	3.88	0.50	3.90	0.70	4.12	0.65	7.52	0.00**	(1,2) (1,3) (2,4)
EI15	4.75	0.45	3.79	0.49	3.49	0.81	3.99	0.73	16.49	0.00**	(1,2) (1,3) (1,4) (2,4) (3,4)
EI16	4.75	0.45	3.80	0.48	3.80	0.75	4.07	0.67	13.971	0.00**	(1,2) (1,3) (1,4) (2,4)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.5.2 *The Relative Agreement of Emotional Intelligence According to Respondent's Industry Experience*

Table 4-34 indicates that only *I always know whether or not I am happy* (EI4) and *I would always encourage myself to try my best* (EI12) items differed significantly between industry experience groups. Most emotional intelligence items were not statistically significant. Nevertheless, the result indicates that respondent's industry experience over 15 years had high level job stress than other groups.

Table 4-34 The Relative Agreement of Emotional Intelligence According to Respondent's Industry Experience

EI Items	1 Less than 5 (N=96)		2 6~10 (N=47)		3 11~15 (N=32)		4 16~20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	4.17	0.47	4.26	0.44	4.13	0.61	4.23	0.72	4.06	0.56	1.30	0.27	
EI2	4.26	0.53	4.17	0.38	4.13	0.61	4.21	0.95	4.10	0.59	0.84	0.50	
EI3	4.13	0.53	4.17	0.38	4.25	0.67	4.30	0.75	4.06	0.56	1.77	0.13	
EI4	4.13	0.67	4.26	0.44	4.13	0.79	4.28	0.74	3.94	0.83	2.63*	0.03	
EI5	4.02	0.60	3.91	0.65	4.00	0.72	4.04	0.62	3.81	0.64	1.76	0.14	
EI6	3.85	0.60	3.98	0.61	3.63	0.71	3.89	0.75	3.86	0.75	1.32	0.26	
EI7	3.98	0.65	3.98	0.61	4.00	0.51	4.02	0.75	3.91	0.67	0.32	0.86	
EI8	3.90	0.64	4.00	0.59	3.75	0.67	3.75	0.90	3.84	0.70	1.04	0.39	
EI9	4.09	0.71	4.17	0.38	4.13	0.79	4.23	0.58	4.04	0.69	0.79	0.53	
EI10	3.98	0.58	3.83	0.92	3.75	0.67	4.13	0.68	3.97	0.69	1.98	0.10	
EI11	3.98	0.65	3.81	0.92	3.75	0.67	4.13	0.68	3.97	0.69	2.01	0.09	
EI12	4.07	0.65	4.00	0.72	3.88	0.61	4.32	0.75	4.05	0.75	2.42*	0.05	
EI13	3.99	0.64	4.09	0.65	3.88	0.61	3.96	0.71	4.04	0.68	0.62	0.65	
EI14	4.03	0.67	4.09	0.50	4.00	0.51	4.04	0.65	4.00	0.65	0.17	0.96	
EI15	3.93	0.74	3.74	0.74	3.75	0.67	3.94	0.72	3.95	0.62	1.14	0.34	
EI16	4.06	0.71	4.00	0.42	3.75	0.67	3.96	0.71	3.95	0.62	1.48	0.21	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.5.3 *The Relative Agreement of Emotional Intelligence According to Respondent's Tenure in the Current Company*

Table 4-35 indicates that 7 emotional intelligence attributes differed significantly according to their tenure in current company. Respondents who had worked for their current company between 16-20 years tended to have higher emotional intelligence than other groups.

Table 4-35 The Relative Agreement of Emotional Intelligence According to
Respondent's Tenure in the Current Company

EI Items	1 Less than 5 (N=101)		2 6–10 (N=50)		3 11–15 (N=41)		4 16–20 (N=53)		5 More than 20 years (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	4.16	0.46	4.16	0.55	4.17	0.63	4.35	0.64	4.02	0.56	2.77	0.03*	(4,5)
EI2	4.25	0.52	4.08	0.49	4.05	0.89	4.44	0.65	4.07	0.60	3.89	0.00**	(4,5)
EI3	4.12	0.52	4.08	0.49	4.27	0.67	4.44	0.65	4.02	0.56	4.86	0.00**	(1,4)
EI4	4.12	0.65	4.16	0.55	4.17	0.77	4.42	0.65	3.88	0.86	4.54	0.00**	(4,5)
EI5	4.02	0.58	3.84	0.68	3.98	0.65	4.23	0.59	3.74	0.62	5.62	0.00**	(2,4) (4,5)
EI6	3.86	0.58	3.90	0.65	3.68	0.79	3.98	0.73	3.85	0.74	1.10	0.36	
EI7	3.98	0.63	3.90	0.65	4.07	0.57	4.13	0.70	3.85	0.67	1.88	0.11	
EI8	3.90	0.62	3.92	0.63	3.76	0.92	3.94	0.73	3.77	0.70	0.86	0.49	
EI9	4.10	0.70	4.14	0.53	4.10	0.70	4.25	0.60	4.05	0.67	0.77	0.55	
EI10	3.98	0.57	3.76	0.92	4.00	0.63	4.15	0.71	3.92	0.70	2.04	0.09	
EI11	3.98	0.63	3.74	0.92	4.00	0.63	4.15	0.71	3.92	0.70	2.13	0.08	
EI12	4.07	0.64	3.92	0.75	4.22	0.61	4.25	0.76	4.01	0.77	1.94	0.10	
EI13	3.99	0.62	4.00	0.70	3.78	0.61	4.15	0.71	4.05	0.66	1.85	0.12	
EI14	4.03	0.66	4.00	0.57	3.88	0.56	4.23	0.63	4.00	0.62	1.94	0.10	
EI15	3.93	0.72	3.68	0.74	3.68	0.65	4.13	0.73	3.94	0.59	3.71	0.01**	(2,4)
EI16	4.06	0.69	3.92	0.49	3.68	0.65	4.15	0.71	3.94	0.59	3.63	0.01**	(1,3) (3,4)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.5.4 *The Relative Agreement of Emotional Intelligence According to Respondent's Age*

Table 4-36 shows that all emotional intelligence differed significantly based on different respondent's age. Overall, respondents those who had more than 60 years old had higher emotional intelligence than other age groups. In addition, the results found that respondents those who had age between 51-60 years had lower emotional intelligence attributes in *I have a good sense of why I have certain feelings most of the time* (EI1), *I have good understanding of my own emotions* (EI2), I really understand what I feel (EI3), I always know whether or not I am happy (EI4), I am sensitive to the feelings and emotions of others (EI7), I have good understanding of the emotions of people around me (EI8), I always set goals for myself and then try my best to achieve them (EI9), I always tell myself I am a competent person (EI10), I am quite capable of controlling my own emotions

(EI14), and I have good control of my own emotions (EI16).

Table 4-36 The Relative Agreement of Emotional Intelligence According to Respondent's Age

EI Items	1 Less than 30 (N=29)		2 31–40 (N=103)		3 41–50 (N=87)		4 51–60 (N=84)		5 More than 60 years old (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	4.14	0.64	4.26	0.52	4.15	0.58	3.93	0.46	4.57	0.51	8.00	0.00**	(2,4) (3,5) (4,5)
EI2	4.00	0.53	4.31	0.54	4.18	0.77	3.93	0.46	4.76	0.44	10.91	0.00**	(1,5) (2,4) (3,5) (4,5)
EI3	4.00	0.53	4.30	0.54	4.15	0.66	3.93	0.46	4.57	0.51	8.87	0.00**	(1,5) (2,4) (3,5) (4,5)
EI4	4.00	0.93	4.29	0.54	4.06	0.85	3.88	0.67	4.57	0.51	6.49	0.00**	(2,4) (4,5)
EI5	3.59	0.50	4.16	0.54	3.95	0.73	3.69	0.56	4.38	0.50	12.48	0.00**	(1,2) (1,5) (2,4) (4,5)
EI6	3.59	0.50	4.01	0.65	3.70	0.72	3.75	0.64	4.57	0.51	10.97	0.00**	(1,2) (1,5) (2,3) (2,5) (3,5) (4,5)
EI7	3.86	0.64	4.12	0.60	3.89	0.71	3.80	0.62	4.38	0.50	5.77	0.00**	(2,4) (3,5) (4,5)
EI8	3.72	0.45	4.00	0.70	3.79	0.76	3.67	0.66	4.38	0.50	6.36	0.00**	(1,5) (2,4) (3,5) (4,5)
EI9	4.03	0.78	4.18	0.62	4.10	0.61	3.95	0.67	4.57	0.51	4.42	0.00**	(4,5)
EI10	3.72	0.45	3.97	0.79	4.10	0.61	3.71	0.65	4.57	0.51	9.23	0.00**	(1,5) (2,5) (3,4) (4,5)
EI11	3.59	0.50	4.05	0.73	4.05	0.73	3.67	0.59	4.76	0.44	14.93	0.00**	(1,2) (1,3) (1,5) (2,4) (2,5) (3,4) (3,5) (4,5)
EI12	3.72	0.70	4.06	0.74	4.31	0.56	3.81	0.69	4.76	0.44	13.93	0.00**	(1,3) (2,5) (3,4) (4,5)
EI13	3.72	0.45	4.10	0.69	3.94	0.67	3.90	0.61	4.57	0.51	6.80	0.00**	(1,5) (2,5) (3,5) (4,5)
EI14	4.00	0.53	4.10	0.69	3.99	0.56	3.86	0.56	4.57	0.51	6.43	0.00**	(1,5) (2,5) (3,5) (4,5)
EI15	3.69	0.71	3.93	0.81	3.89	0.64	3.75	0.53	4.57	0.51	7.03	0.00**	(1,5) (2,5) (3,5) (4,5)
EI16	4.14	0.64	4.01	0.71	3.90	0.63	3.80	0.51	4.57	0.51	7.47	0.00**	(2,5) (3,5) (4,5)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.5.5 *The Relative Agreement of Emotional Intelligence According to Respondent's Educational Level*

The scores for emotional intelligence items differed significantly according to respondent's educational level except for *I would always encourage myself to try my best* (EI2), *I always tell myself I am a competent person* (EI10), I would always encourage myself to try my best (EI12), *I can always calm down quickly*

when I am very angry (EI15) (see Table 4-37). Overall, respondents with higher

educational levels had higher emotional intelligence than other groups. Results

indicated that respondents who held a college or university degree tended to agree

with the emotional intelligence item, *I have good understanding of my own*

emotions (EI2), followed by *I have a good sense of why I have certain feelings*

most of the time (EI1) and *I really understand what I feel* (EI3) (mean scores over

4.0).

Table 4-37 The Relative Agreement of Emotional Intelligence According to
Respondent's Educational Level

EI Items	1 High School or below (N=104)		2 College/University (N=200)		3 Master or above (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	4.02	0.50	4.20	0.58	4.40	0.50	5.84	0.00**	(1,2) (1,3)
EI2	4.05	0.69	4.23	0.59	4.40	0.50	4.17	0.02*	
EI3	4.02	0.57	4.20	0.58	4.40	0.50	5.40	0.01**	(1,2) (1,3)
EI4	3.94	0.85	4.18	0.66	4.40	0.50	5.29	0.01**	(1,2) (1,3)
EI5	3.83	0.67	3.96	0.61	4.40	0.50	7.22	0.00**	(1,3) (2,3)
EI6	3.76	0.72	3.88	0.68	4.20	0.41	3.69	0.03*	(1,3)
EI7	3.88	0.72	3.97	0.61	4.40	0.50	5.63	0.00**	(1,3) (2,3)
EI8	3.79	0.77	3.84	0.66	4.40	0.50	6.76	0.00**	(1,3) (2,3)
EI9	4.01	0.69	4.12	0.63	4.65	0.49	8.37	0.00**	(1,3) (2,3)
EI10	3.96	0.61	3.93	0.76	4.20	0.41	1.37	0.26	
EI11	3.96	0.61	3.91	0.77	4.40	0.50	4.43	0.01**	(1,3) (2,3)
EI12	4.13	0.60	4.02	0.77	4.40	0.50	2.98	0.05	
EI13	3.91	0.68	4.02	0.65	4.35	0.59	3.81	0.02*	(1,3)
EI14	3.91	0.62	4.06	0.61	4.35	0.59	4.75	0.01**	(1,3)
EI15	3.83	0.61	3.93	0.74	3.90	0.72	0.68	0.51	
EI16	3.83	0.61	4.03	0.66	4.15	0.49	4.27	0.02*	(1,2)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.5.6 *The Relative Agreement of Emotional Intelligence According to Firm Size*

Table 4-38 indicates that most emotional intelligence attributes differed from

the various firm sizes in terms of employee number. Respondents working for

firms with 'more than 200' strongly agreed with the EI items, *I have good*

understanding of my own emotions (EI2) and *I would always encourage myself to*

try my best (EI12); *I always set goals for myself and then try my best to achieve*

them (EI9), *I really understand what I feel* (EI3), and *I am quite capable of controlling my own emotions* (EI14) (mean scores over 4.25). The result indicates that respondent's firm size over 100 employees have high level emotional intelligence compare with firm size less than 100 employees.

Table 4-38 The Relative Agreement of Emotional Intelligence According to Respondent's Firm Size

EI Items	1 Less than 100 (N=17)		2 101-200 (N=188)		3 More than 200 (N=119)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
EI1	3.94	0.75	4.13	0.61	4.23	0.42	2.49	0.08	
EI2	3.65	1.17	4.15	0.62	4.30	0.46	9.18	0.00**	(1,2)(1,3)
EI3	3.94	0.75	4.09	0.61	4.29	0.46	6.15	0.00**	(2,3)
EI4	3.94	0.75	4.04	0.82	4.26	0.51	4.02	0.02*	(2,3)
EI5	3.71	0.47	3.85	0.66	4.13	0.58	9.19	0.00**	(1,3)(2,3)
EI6	3.47	0.51	3.85	0.70	3.93	0.66	3.51	0.03*	(1,3)
EI7	3.71	0.47	3.88	0.68	4.13	0.60	7.15	0.00**	(1,3)(2,3)
EI8	3.18	0.88	3.83	0.70	4.00	0.61	11.25	0.00**	(1,2)(1,3)
EI9	4.00	0.00	4.01	0.73	4.29	0.53	7.37	0.00**	(2,3)
EI10	3.53	0.51	3.86	0.76	4.18	0.55	11.76	0.00**	(1,3)(2,3)
EI11	3.76	0.44	3.81	0.80	4.21	0.50	12.92	0.00**	
EI12	3.82	0.88	3.97	0.76	4.29	0.54	8.83	0.00**	(1,3)(2,3)
EI13	3.47	0.51	3.92	0.69	4.21	0.57	13.86	0.00**	(1,3)(1,3) (2,3)
EI14	3.47	0.51	3.92	0.65	4.28	0.47	21.71	0.00**	(1,2)(1,3) (2,3)
EI15	3.00	0.00	3.78	0.73	4.20	0.51	33.94	0.00**	(1,2)(1,3) (2,3)
EI16	3.24	0.44	3.89	0.64	4.20	0.58	22.64	0.00**	(1,2)(1,2) (2,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.6 *The Relative Agreement of Safety Behaviour According to Respondent's Characteristics*

4.3.6.1 *The Relative Agreement of Safety Behaviour According to Respondent's Job Title*

Table 4-39 shows the results of ANOVA to test the different safety behaviour based on respondent's job title. *My subordinate actively provides safety improvement suggestions* (LSB11) and *My subordinate wears personal protective equipment at work* (LSB12) are found differed

significantly. Nevertheless, general employees tended to agree with the following safety behaviour items, which received mean scores over 3.89: *My subordinate complies with safety rules and standard operational procedures* (LSB8), *My subordinate has safety awareness at work* (LSB9), *My subordinate wears personal protective equipment at work* (LSB12) and *My subordinate does not neglect safety, even when in a rush.* (LSB10. It should be noted that most score of safety behaviour from respondents are less than 4.0. This reflects that container terminal operators should pay attention on employee's safety behaviour.

Table 4-39 The Relative Agreement of Safety Behaviour According to Respondent's Job Title

LSB Items	1 Manager/ Assistant manager (N=16)		2 Supervisor (N=114)		3 Specialist (N=41)		4 General employee (N=153)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	4.00	0.00	4.03	0.66	3.80	0.75	4.06	0.69	1.57	0.20	
LSB9	4.00	0.00	4.09	0.43	4.00	0.45	4.04	0.66	0.36	0.78	
LSB10	4.00	0.00	3.98	0.68	4.00	0.63	3.94	0.81	0.12	0.95	
LSB11	3.75	0.45	3.66	0.71	4.10	0.54	3.80	0.86	3.40	0.02*	(2,3)
LSB12	3.75	0.45	3.66	0.71	4.10	0.54	3.95	0.60	7.16	0.00**	(2,3)(2,4)
LSB13	3.75	1.13	3.70	0.76	3.71	0.64	3.92	0.71	2.11	0.10	
LSB14	3.50	0.89	3.67	0.82	3.80	0.60	3.76	0.76	0.96	0.41	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.6.2 *The Relative Agreement of Safety Behaviour According to Respondent's Industry Experience*

Table 4-40 shows that no safety behaviours attributes were found significantly different according to respondent's industry experience. Nevertheless, respondent's industry experience over 20 years had higher level of safety behaviour than other groups. Results indicated that those who had over 20 years of industry experience tended to strongly agree with *my subordinate has safety awareness at work* (LSB9), followed by *my subordinate complies with safety rules and standard operational procedures* (LSB8), and *my subordinate does not neglect*

safety, even when in a rush (LSB10), which received mean scores over 4.

Table 4-40 The Relative Agreement of Safety Behaviour According to
Respondent's Industry Experience

LSB Items	1 Less than 5 (N=96)		2 6~10 (N=47)		3 11~15 (N=32)		4 16~20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	3.89	0.72	4.00	0.59	4.00	0.51	4.15	0.57	4.07	0.74	1.63	0.17	
LSB9	3.95	0.62	4.09	0.50	4.00	0.51	4.06	0.50	4.15	0.50	1.73	0.14	
LSB10	3.92	0.72	4.00	0.59	3.75	0.84	4.06	0.66	4.02	0.77	1.20	0.31	
LSB11	3.77	0.88	3.91	0.50	3.50	0.88	3.75	0.70	3.84	0.74	1.62	0.17	
LSB12	3.90	0.59	3.83	0.56	3.88	0.61	3.75	0.70	3.89	0.72	0.49	0.75	
LSB13	3.85	0.79	3.83	0.56	3.63	0.87	3.75	0.70	3.83	0.76	0.67	0.61	
LSB14	3.55	0.72	3.91	0.65	3.75	0.98	3.77	0.72	3.76	0.79	2.07	0.08	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; $* = P < 0.05$; $** = P < 0.01$

4.3.6.3 *The Relative Agreement of Safety Behaviour According to Respondent's Tenure in Current Company*

Table 4-41 indicates that only safety behaviour attributes of *My subordinate complies with safety rules and standard operational procedures* (LSB8), *My subordinate does not neglect safety, even when in a rush* (LSB10), and *My subordinate actively participates in safety meetings* (LSB14) were found to be different significantly according to respondent's tenure in their current companies. Overall, respondents who had tenure of 11-15 years tended to have higher safety behaviour than other groups.

Table 4-41 The Relative Agreement of Safety Behaviour According to Respondents' Tenure in Current Company

LSB Items	1 Less than 5 (N=101)		2 6–10 (N=50)		3 11–15 (N=41)		4 16–20 (N=53)		5 20 and above (N=96)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	3.89	0.71	3.92	0.63	4.32	0.47	4.06	0.52	4.04	0.77	3.35	0.01**	(1,3)
LSB9	3.95	0.61	4.00	0.57	4.20	0.40	4.06	0.52	4.12	0.50	2.06	0.09	
LSB10	3.90	0.73	3.80	0.78	4.32	0.47	3.96	0.62	3.98	0.79	3.39	0.01**	(1,3)(2,3)
LSB11	3.76	0.87	3.72	0.70	4.00	0.63	3.73	0.74	3.77	0.75	0.98	0.42	
LSB12	3.86	0.60	3.92	0.49	4.00	0.63	3.65	0.76	3.87	0.71	1.92	0.11	
LSB13	3.82	0.79	3.84	0.55	3.90	0.83	3.65	0.76	3.81	0.75	0.76	0.55	
LSB14	3.54	0.73	3.98	0.68	3.80	0.75	3.67	0.78	3.77	0.83	3.11	0.02*	(1,2)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.6.4 *The Relative Agreement of Safety Behaviour According to Respondent's Age*

Table 4-42 shows *My subordinate complies with safety rules and standard operational procedures* (LSB8), *My subordinate does not neglect safety, even when in a rush* (LSB10), and *My subordinate actively provides safety improvement suggestions* (LSB11) safety behaviour attributes differed significantly according to respondent's age. The respondents' age 61 and above strongly agreed with the employees' safety behaviour item, *my subordinate complies with safety rules and standard operational procedures* (LSB8), *my subordinate does not neglect safety, even when in a rush* (LSB10) and *my subordinate has safety awareness at work* (LSB9), which received mean scores over 4.10. Results indicated that respondent groups in ages 61 and above had higher agreement of safety behaviour than other groups

Table 4-42 The Relative Agreement of Safety Behaviour According to Respondent's Age

LSB Items	1 Less than 30 (N=29)		2 31–40 (N=103)		3 41–50 (N=87)		4 51–60 (N=84)		5 61 and above (N=21)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	3.72	1.03	3.96	0.59	4.10	0.61	3.98	0.66	4.43	0.51	4.11	0.00**	(1,5)
LSB9	4.00	0.53	4.02	0.54	4.05	0.65	4.07	0.46	4.19	0.40	0.53	0.72	
LSB10	3.72	0.70	4.03	0.62	4.00	0.76	3.82	0.79	4.43	0.51	4.21	0.00**	(1,5)(4,5)
LSB11	4.28	0.70	3.83	0.62	3.63	0.89	3.62	0.79	4.19	0.40	6.78	0.00**	(1,3)(1,4) (4,5)
LSB12	4.14	0.64	3.83	0.62	3.86	0.63	3.76	0.69	4.00	0.63	2.17	0.07	
LSB13	4.00	0.93	3.83	0.73	3.77	0.74	3.76	0.70	3.76	0.77	0.64	0.63	
LSB14	3.72	0.70	3.71	0.69	3.72	0.87	3.77	0.83	3.57	0.51	0.30	0.88	

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.3.6.5 *The Relative Agreement of Safety Behaviour According to Respondent's Educational Level*

In Table 4-43, safety behaviour attributes differed significantly according to respondent's educational level except for *My subordinate actively provides safety improvement suggestions* (LSB11). Overall, results indicate that respondents those who had high school degree had higher perceptions of safety behaviours than other educational groups. The result show that most of respondents are workers in front line. They need to concern their safety behaviours in order to avoid the occurrence of accidents or incidents.

Table 4-43 The Relative Agreement of Safety Behaviour According to Respondent's Educational Level

LSB Items	1 High School or below (N=104)		2 College/ University (N=200)		3 Master including above (N=20)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	4.18	0.59	3.91	0.71	4.15	0.49	6.28	0.00**	(1,2)
LSB9	4.14	0.61	3.99	0.51	4.20	0.41	3.83	0.02*	(1,2)
LSB10	4.10	0.88	3.89	0.64	4.10	0.55	3.34	0.04*	(1,2)
LSB11	3.88	0.94	3.75	0.69	3.70	0.47	1.11	0.33	
LSB12	4.08	0.62	3.73	0.66	4.00	0.00	10.97	0.00**	(1,2)
LSB13	4.00	0.75	3.69	0.76	4.00	0.00	7.04	0.00**	(1,2)
LSB14	3.92	0.89	3.62	0.71	3.75	0.44	5.66	0.00**	(1,2)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = P < 0.05; ** = P < 0.01

4.3.6.6 *The Relative Agreement of Safety Behaviour According to Respondent's Firm Size*

Table 4-44 indicates that four safety behaviours attributes differed significantly according to respondent's firm size in terms of employee number. These attributes are *My subordinate has safety awareness at work* (LSB9), *My subordinate does not neglect safety, even when in a rush* (LSB10), *My subordinate actively provides safety improvement suggestions* (LSB11), and *My subordinate actively participates in safety meetings* (LSB14). Overall, respondents who are working for the firm size less than 100 people had higher safety behaviour than other groups. Respondents working for firms with 'more than 200' strongly agreed with the employees' safety behaviour items, *my subordinate has safety awareness at work* (LSB9), *my subordinate complies with safety rules and standard operational procedures* (LSB8) ,and *my subordinate does not neglect safety, even when in a rush.* (LSB10) (mean scores over 3.97).

Table 4-44 The Relative Agreement of Safety Behaviour According to Respondent's Firm Size

LSB Items	1 Less than 100 (N=17)		2 101-200 (N=188)		3 More than 200 (N=119)		F ratio	P value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.			
LSB8	4.29	0.85	3.94	0.65	4.09	0.66	3.60	0.03*	
LSB9	4.00	0.71	3.98	0.57	4.17	0.46	4.61	0.01**	(2,3)
LSB10	4.53	0.51	3.88	0.74	4.03	0.68	7.24	0.00**	(1,2)(1,3)
LSB11	4.00	0.71	3.67	0.75	3.93	0.78	5.08	0.01**	(2,3)
LSB12	4.00	0.71	3.83	0.56	3.88	0.76	0.67	0.51	
LSB13	4.00	0.71	3.73	0.67	3.89	0.85	2.22	0.11	
LSB14	4.00	0.71	3.62	0.72	3.85	0.83	4.58	0.01**	(2,3)

Note: 1=Strongly disagree, 5=Strongly agree; SD= standard deviation; * = $P < 0.05$; ** = $P < 0.01$

4.4 Summary

This chapter has presented the general results and descriptive statistics of the survey data. This study found that the two highest scoring LMX items were *Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work* and *I have a good working relationship with my supervisor*. Meanwhile, the five highest scoring safety climate items were *my company has set up a work safety rule*, *my company announces safety policies*, *my company has established a safety responsibility system*, *my supervisor says a 'good word' to workers who pay special attention to safety*, and *my supervisor uses explanations to get us to act safely*.

This section also analysed the perceptions of LMX, safety climate, OCB, job stress, emotional intelligence, and safety behaviour in relation to respondent characteristics. Results indicate that item scores differed significantly according to respondent characteristics. Respondents who had tenure in their current company for between six and ten years tended to score LMX items higher than other groups. Meanwhile, scores of job stress items differed significantly according to respondent job title, with the scores of managers/assistant managers indicating that

they endure higher job stress than supervisors and general employees.

Exploratory factor analysis, reliability tests, confirmatory factor analysis and structural equation modelling will be conducted in the next chapter to examine how LMX, safety climate, OCB, job stress, and emotional intelligence impact employee safety behaviour in container terminal operators.

CHAPTER 5: EMPIRICAL RESULTS AND ANALYSIS

The previous chapter discussed the general findings and summarised descriptive analysis results based on respondents' perceptions. In contrast, this chapter demonstrates the empirical results of analyses using different statistical techniques. This chapter comprises six sections. Section 5.1 explains the exploratory factor analysis in order to identify critical leader–member exchange, safety climate, employees' organisational citizenship behaviour (OCB), emotional intelligence, and job stress dimensions. Section 5.2 conducts a reliability test to ensure the internal consistency and stability of each factor. Section 5.3 presents the comparison of the agreement of leader–member exchange, safety climate, employees' organisational citizenship behaviour, emotional intelligence and job stress dimensions according to respondents' characteristics. Section 5.4 explores the results of confirmatory factor analysis and structural equation model. Section 5.5 shows the results of hypotheses testing and discussions. A summary of this chapter is demonstrated in the final section.

5.1 Exploratory Factor Analysis

An exploratory factor analysis was conducted to identify the constructs of leader–member exchange, safety climate, organisational citizenship behaviour, emotional intelligence, and job stress of container terminal operators in Taiwan. Exploratory factor analysis is frequently used as an exploratory technique when the researcher wishes to summarise the structure of a set of variables. It aims to narrow down a large set of variables to a smaller manageable set of underlying dimensions, thereby helping to detect the presence of meaningful patterns among

the original variables.

Before to carrying out a factor analysis, it is important to ensure the suitability of data. The reliability of exploratory factor analysis depends on sample size. Generally, a minimum of five subjects per variable or a sample of 100 subjects is required for factor analysis (Coakes and Steed, 2001). The data is suitable for performing exploratory factor analysis, while the Bartlett Test of Sphericity is significant and the Kaiser-Meyer-Olkin value is above 0.8 (Hair *et al.*, 1998).

5.1.1 Leader-Member Exchange Dimensions

A factor analysis with VARIMAX rotation was employed to identify the LMX dimensions in container terminal operators. The Kaiser-Meyer-Olkin value was 0.821 and the Bartlett Test of Sphericity was below 0.01 [$\chi^2 = 1709.824$, P < 0.00], indicating that a factor analysis would be useful with the data. Eigenvalue greater than one were used to determine the number of factors in each data set (Iacobucci and Churchill, 2010). Table 5-1 shows that only one factor was extracted, which accounted for approximately 65.567% of the total variance. Thus, this factor represents all the LMX attributes in container terminal operators. To aid interpretation, only loading factor on each factor at 0.50 or higher were considered a conservative criterion according to the study of Hair *et al.* (2010).

Table 5-1 Exploratory Factor Analysis of LMX Attributes

LMX attributes		Factor 1
LMX3:	My supervisor recognizes my potential.	0.881
LMX2:	My supervisor understands my job problems and needs.	0.880
LMX7:	I have a good working relationship with my supervisor.	0.866
LMX4:	Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.	0.856
LMX1:	My supervisor is satisfied with my working performance.	0.807
LMX6:	I would defend and justify my supervisor's decision if he was not present to do so.	0.720
LMX5:	Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense.	0.622
Eigenvalues		4.590
Variance explained (%)		65.567

5.1.2 Safety Climate Dimensions

Exploratory factor analysis with VARIMAX rotation was also conducted to reduce the 19 safety climate attributes of container terminal operators into a smaller, manageable set of underlying dimensions. The value of the Bartlett Test of Sphericity was less than 0.01 [χ^2 = 6004.854, P < 0.00], and the Kaiser-Meyer-Olkin value was 0.922, thus indicating that the data were suitable for performing an exploratory factor analysis. Eigenvalues greater than one were used to determine the number of factors in each data set (Iacobucci and Churchill, 2010). Table 5-2 indicated that two factors were extracted, which accounted for approximately 81.679% of the total variance. These two factors were found to underlie the safety climate dimensions based on survey responses. They are labelled and described below.

Factor 1: Safety management

The first factor consists of 11 items, namely: *my supervisor says a 'good word' to workers who pay special attention to safety, my supervisor frequently inspects*

employees to ensure they are obeying safety rules, my supervisor insists that employees obey safety rules when fixing equipment or machines, my supervisor uses explanations (not just compliance) to get us to act safely, my company motivates workers' safety behaviours, my company encourages workers' participation in safety decision-making, my supervisor makes sure employees receive all the safety equipment needed to do the job safely, my supervisor refuses to ignore safety rules when work falls behind schedule, my supervisor spends time helping employees' learn to identify problems before they arise, the design of safety training programs is good in my company, my company provides sufficient safety education, my supervisor insists employees wear protective equipment even if it is uncomfortable, safety training programs have been adopted in my workplace, the safety training programs are helpful in preventing accidents, and *my company encourages workers to provide safety suggestions. My supervisor says a 'good word' to workers who pay special attention to safety* had the highest factor loading for this factor. Most safety climate attributes were related to supervisor safety behaviour or company offers safety training or safety equipment; therefore, this factor was named *safety management*. It accounted for 74.100% of the total variance.

Factor 2: Safety policy

The second factor comprises three items, namely: *my company announces safety policies, my company has established a safety responsibility system,* and *my company has set up a work safety rule.* The item *my company has established a safety responsibility system* had the highest factor loading for this factor. The three items were related to company policy; therefore, this factor was designed as *company policy*. It accounted for 7.579% of the total variance.

Table 5-2 Exploratory Factor Analysis of Safety Climate Attributes

Safety Climate attributes		Factor 1	Factor 2
SC17	My supervisor says a "good word" to workers who pay special attention to safety.	0.897	0.286
SC12	My supervisor frequently inspects employees to obey the safety rules.	0.891	0.344
SC16	My supervisor insists that employees obey safety rules when fixing equipment or machines.	0.855	0.407
SC13	My supervisor uses explanations (not just compliance) to get us to act safely.	0.838	0.372
SC4	My company motivates workers' safety behaviours.	0.827	0.397
SC5	My company encourages workers' participation in safety decision-making.	0.811	0.391
SC11	My supervisor makes sure employees receive all the safety equipment needed to do the job safely.	0.790	0.294
SC18	My supervisor spends time to help employees' learning in identifying problems before they arise.	0.786	0.286
SC8	The design of safety training programs is good in my company.	0.762	0.430
SC19	My supervisor insists employees wear our protective equipment even if it is uncomfortable.	0.736	0.462
SC6	My company encourages workers to provide safety suggestion.	0.694	0.483
SC1	My company announces safety policies.	0.300	0.912
SC2	My company establishes a safety responsibility system.	0.362	0.848
SC3	My company sets up a work safety rule.	0.422	0.805
Eigenvalues		10.374	1.061
Variance explained (%)		75.857	5.919

5.1.3 *Organisational Citizenship Behaviour (OCB) Dimensions*

There were twelve items used to measure employees' organisational citizenship behaviour (OCB) among container terminal operators. Results indicated that the value of Bartlett Test of Sphericity [$\chi^2 = 2975.329$, $P < 0.00$] was less than 0.01, and the value of Kaiser-Meyer-Olkin was 0.895. These values indicate that the data are suitable for performing exploratory factor analysis. Table 5-3 indicates that two factors accounted for approximately 75.914% of the total

variance. Table 5-3 illustrates all items loaded for each of the factors are at 0.5 or higher. Consequently, these two factors were found to underlie the organisational citizenship behaviour set. They are labelled and described below.

Table 5-3 Exploratory Factor Analysis of Organizational Citizenship Behaviour Attributes

OCB attributes		Factor 1	Factor 2
OCB1	I help co-worker who has been absent	0.884	0.143
OCB6	I actively forward work safety-related information to co-workers.	0.865	0.213
OCB2	I help co-worker who has heavy workloads.	0.862	0.200
OCB3	I actively help supervisor even he or her was not asked.	0.845	
OCB7	I will give early notice when I unable to work.	0.817	0.212
OCB5	I actively help new employees.	0.807	0.235
OCB12	I adhere to formal rules in order to maintain an order in the company.	0.789	0.440
OCB11	I protect company's equipment and property.	0.776	0.365
OCB9	I do not waste office hours on personal phone conversations.	0.018	0.912
OCB8	I do not take undeserved work break at work.	0.454	0.701
Eigenvalues		7.709	1.222
Variance explained (%)		64.487	11.426

Factor 1: Helping behaviour

The first factor consists of eight items, namely: *I help co-workers who have been absent, I actively forward work safety-related information to co-workers, I help co-workers who have heavy workloads, I actively help my supervisor even when he or her does not ask, I will give early notice when I unable to work, I actively help new employees, I adhere to formal rules in order to maintain order in the company,* and *I protect the company's equipment and property.* The item *I help co-workers who have been absent* had the highest factor loading for this factor. All items were related to helping activities; therefore, this factor was identified as *helping behaviour*. It accounted for 64.487% of the total variance.

Factor 2: Compliance behaviour

The second factor comprises two items, namely: *I do not waste office hours on personal phone conversations,* and *I do not take undeserved breaks at work. I do not waste office hours on personal phone conversations* had the highest factor loading for this factor. Both items were related to indicators of employees' working compliance. This factor was therefore identified as an employee's working compliance. It accounted for 11.426% of the total variance.

5.1.4 Emotional Intelligence Dimensions

A factor analysis was used to identify key emotional intelligence dimensions. Results showed that the value of the Bartlett Test of Sphericity [$\chi 2 = 3845.739$, P < 0.00] was less than 0.01, and that of the Kaiser-Meyer-Olkin value was 0.887; these indicate that the data are suitable for performing exploratory factor analysis. Table 5-4 indicates that two factors were extracted, which together accounted for approximately 77.77% of the total variance. Table 5-4 also reveals that all items loaded for each of the factors are 0.50 or higher. Consequently, these two factors were found to underlie emotional intelligence sets based on survey responses. These are labelled and described below.

Table 5-4 Exploratory Factor Analysis of Emotional Intelligence Attributes

Emotional Intelligence Attributes		Factor 1	Factor 2
EI10	I always tell myself I am a competent person.	0.913	0.201
EI11	I am a self-motivating person.	0.867	0.293
EI12	I would always encourage myself to try my best.	0.852	0.228
EI9	I always set goals for myself and then try my best to achieve them.	0.716	0.423
EI8	I have good understanding of the emotions of people around me.	0.676	0.436
EI6	I am a good observer of others' emotions	0.676	0.455
EI15	I can always calm down quickly when I am very angry.	0.624	0.464
EI1	I have a good sense of why I have certain feelings most of the time.	0.345	0.896
EI2	I have good understanding of my own emotions.	0.344	0.881
EI3	I really understand what I feel.	0.225	0.872
EI4	I always know whether or not I am happy.	0.564	0.648
Eigenvalues		7.919	1.345
Variance explained (%)		65.604	12.173

Factor 1: Regulation of emotion

The first factor consists of four items, namely: *I can control my temper so that I can handle difficulties rationally, I am quite capable of controlling my own emotions, I can always calm down quickly when I am very angry,* and *I have good control of my own emotions*. All items were related to regulation of self-emotion; therefore, this factor was identified as a *regulation of emotion* factor. It accounted for 65.604% of the total variance.

Factor 2: Self-emotion appraisal

The second factor consisted of four items, namely: *I have a good sense of why I have certain feelings most of the time, I really understand what I feel, I always know whether or not I am happy,* and *I would always encourage myself to try my best*. All items were related to self-emotion appraisal; therefore, this factor was identified as a *self-emotion appraisal*. It accounted for 12.173% of the total

variance.

5.1.5 *Job Stress Dimensions*

For the job stress dimension, results indicated that the value of the Bartlett Test of Sphericity [χ^2 = 1201.869, P < 0.00] was less than 0.01, and the Kaiser-Meyer-Olkin value was 0.782; these indicated that the data were suitable for performing exploratory factor analysis. Table 5-5 shows that these two factors accounted for approximately 72.356% of the total variance. All items loaded for each of the factors were greater than 0.5. Consequently, these two factors were found to underlie job stress sets based on survey responses. They are labelled and described below.

Table 5-5 Exploratory Factor Analysis of Job Stress Attributes

Job Stress Attributes		Factor 1	Factor 2
JS2	My job must work very hard.	0.837	0.141
JS1	My job must complete a lot of work.	0.808	0.148
JS5	My job must be performing complex tasks.	0.762	0.281
JS3	My job has time pressure.	0.676	0.381
JS10	My job requires a high level of accountability.	0.280	0.884
JS9	My job requires a high level of responsibility.	0.093	0.881
JS7	My job must balance several factors at once.	0.416	0.768
Eigenvalues		3.896	1.169
Variance explained (%)		55.651	16.705

Factor 1: Challenge Stressor

The first factor consists of four items, namely: *my job must work very hard, my job must complete a lot of work, my job must be performing complex tasks,* and *my job has time pressure.* All items were related to job stress; therefore, this factor was identified as a *job stress* factor. It accounted for 55.65% of total variance.

Factor 2: Job requirement

The second factor comprises four items, namely: *my job requires a high level*

of accountability, my job requires a high level of responsibility, and *my job must balance several factors at once. My job requires a high level of accountability* had the highest factor loading for this factor. All three items were related to indicators of job requirements. This factor was therefore identified as a *job requirement* factor. It accounted for 16.705% of the total variance.

5.1.6   Safety Behaviour Dimensions

A factor analysis was also used to identify employees' safety behaviours. Results indicated that the value of the Bartlett Test of Sphericity [χ^2 = 1695.577, P < 0.00] was less than 0.00, and the Kaiser-Meyer-Olkin value was 0.848; these indicated that the data were suitable for performing exploratory factor analysis. Table 5-6 shows that two factors from the analysis accounted for approximately 66.436% of the total variance. All items loaded for each of the factors were over 0.5. Consequently, these two factors were found to underlie job stress sets based on survey responses. They are labelled and described below.

Table 5-6 Exploratory Factor Analysis of Safety Behaviour Attributes

Safety behaviour Attributes		Factor 1
LSB9	My subordinate has safety awareness at work	0.856
LSB11	My subordinate actively provides safety improvement suggestions.	0.842
LSB12	My subordinate wears personal protective equipment at work	0.840
LSB14	My subordinate actively participates in safety meetings.	0.821
LSB13	My subordinate participates in setting safety goal.	0.812
LSB8	My subordinate complies with safety rules and standard operational procedures.	0.770
LSB10	My subordinate does not neglect safety, even when in a rush.	0.761
Eigenvalues		4.651
Variance explained (%)		66.436

After performing the exploratory factor analysis, a reliability test was conducted to determine whether these factors were consistent and reliable. The

reliability of a measure or construct indicates the extent to which it measures without bias and, ensures consistent measurements across the various items in the instrument. The internal consistency and stability of each factor, corrected item-total correlation, and the Cronbach's alpha coefficient (α) were examined in this study.

Corrected item-total correlation has been used extensively in the psychology, marketing, and manufacturing literature for the development of unidimensional scales. It indicates the Pearson correlation coefficient between the score of an individual item or indicator and the sum of the scores of the remaining items. Because corrected item-total correlation does not include the score of the particular item in question in calculating the composite score, it is labelled as being a 'corrected' correlation (Koufteros, 1999). Corrected item-total correlation analysis was performed for each construct. Table 5-7 shows that all corrected item-total correlation scores were well above 0.5, confirming that each item measured the same underlying construct.

In addition to the corrected item-total correlation coefficients, the *Cronbach's alpha coefficient* (α) is widely used and suitable for measuring internal consistency reliability among a group of items combined to form a single scale (Koufteros, 1999). The Cronbach's alpha coefficient varies between 1 and 0. Basically, level of 0.7 or more are considered a satisfactory level of reliability in basic research (Nunnally, 1978; Iacobucci and Churchill, 2010; Litwin, 1995). The Cronbach's alpha values for all dimensions in this study are shown in Table 5-7, Table 5-8, Table 5-9, Table 5-10, Table 5-11, and Table 5-12. Results indicated that the reliability values of the five factors were well above the suggested threshold of 0.7. In addition, Table 5-7 shows that no items could be removed from the scale to

increase the Cronbach's alpha value significantly for the LMX dimension. Hence, the results were considered adequate for confirming a satisfactory level of reliability in this study (Nunnally, 1978; Sekaran, 1992; Churchill, 1991), and similar results are shown in Table 5-8 (safety climate), Table 5-9 (OCB), Table 5-10 (job stress), Table 5-11 (emotional intelligence), and Table 5-12 (safety behaviour). However, these techniques do not allow for assessment of unidimensionality, convergent validity, or discriminant validity (Anderson and Gerbing, 1988). Confirmatory factor analysis with a multiple-indicator measurement model was used to ensure validity (Anderson and Gerbing, 1988), and it discussed in the following section.

Table 5-7 Reliability Test for LMX

Constructs	Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
LMX (Mean=3.98; S.D.=0.596)	0.914		
LMX1: My supervisor is satisfied with my working performance.		0.765	0.899
LMX2: My supervisor understands my job problems and needs.		0.814	0.891
LMX3: My supervisor recognizes my potential.		0.824	0.890
LMX4: Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.		0.759	0.899
LMX6: I would defend and justify my supervisor's decision if he was not present to do so.		0.608	0.914
LMX7: I have a good working relationship with my supervisor.		0.814	0.891

Table 5-8 Reliability Test for Safety Climate

Constructs		Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
Safety Climate 1 – Safety Management (Mean=4.14; S.D.=0.669)		0.976		
SC4:	My company motivates workers' safety behaviours		0.905	0.972
SC5:	My company encourages workers' participation in safety decision-making.		0.880	0.973
SC6:	My company encourages workers to provide safety suggestion.		0.811	0.975
SC8:	The design of safety training programs is good in my company		0.840	0.975
SC11:	My supervisor makes sure employees receive all the safety equipment needed to do the job safely		0.800	0.975
SC12:	My supervisor frequently inspects employees to obey the safety rules.		0.941	0.972
SC13:	My supervisor uses explanations (not just compliance) to get us to act safely.		0.899	0.973
SC14:	My supervisor refuses to ignore safety rules when work falls behind schedule		0.925	0.972
SC16:	My supervisor insists that employees obey safety rules when fixing equipment or machines		0.934	0.972
SC17:	My supervisor says a "good word" to workers who pay special attention to safety.		0.919	0.972
SC18:	My supervisor spends time to help employees' learning in identifying problems before they arise		0.796	0.976
Safety Climate 2 – Safety Policy (Mean=4.33; S.D.=0.615)		0.923		
SC1:	My company announces safety policies		0.835	0.896
SC2:	My company establishes a safety responsibility system		0.890	0.852
SC3:	My company sets up a work safety rule.		0.815	0.914

Table 5-9 Reliability Test for OCB

Constructs	Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
OCB_1_Helping behaviour (Mean=4.28; S.D.=0.516)	0.949		
OCB1: I help co-worker who has been absent.		0.849	0.940
OCB2: I help co-worker who has heavy workloads.		0.844	0.940
OCB3: I actively help the supervisor even he or her was not asked.		0.754	0.947
OCB5: I actively help new employees.		0.794	0.944
OCB6: I actively forward work safety-related information to co-workers		0.853	0.940
OCB7: I will give early notice when I unable to work.		0.790	0.944
OCB11: I protect company's equipment and property		0.802	0.943
OCB12: I adhere to formal rules in order to maintain an order in the company		0.841	0.941
OCB_2_Compliance behaviour (Mean=3.94; S.D.=0.669)	0.746		
OCB8: I do not take undeserved work break at work		0.477	
OCB9: I do not waste office hours on personal phone conversations		0.477	

Table 5-10 Reliability Test for Job Stress

Constructs	Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
Job Stress_1 _Challenge Stressor (Mean=3.74; S.D.=0.645)	0.822		
JS1: My job must complete a lot of work		0.664	0.767
JS2: My job must work very hard		0.690	0.754
JS3: My job has time pressure		0.600	0.797
JS5: My job must be performing complex tasks		0.638	0.782
Job Stress_2 _Job requirement (Mean=4.17; S.D.=0.559)	0.862		
JS7: My job must balance several factors at once		0.704	0.843
JS9: My job requires a high level of responsibility		0.707	0.838
JS10: My job requires a high level of accountability		0.818	0.728

Table 5-11 Reliability Test for Emotional Intelligence

Constructs		Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
Emotional Intelligence_1 Regulation of emotion (Mean=4.15; S.D.=0.5785)		0.944		
EI1:	I have a good sense of why I have certain feelings most of the time.		0.924	0.913
EI2:	I have good understanding of my own emotions.		0.895	0.918
EI3:	I really understand what I feel.		0.893	0.920
EI4:	I always know whether or not I am happy.		0.794	0.944
Emotional Intelligence_2 Self-emotion appraisal (Mean=3.96; S.D.=0.5859)		0.932		
EI6:	I am a good observer of others' emotions		0.755	0.924
EI8:	I have good understanding of the emotions of people around me.		0.763	0.923
EI9:	I always set goals for myself and then try my best to achieve them.		0.766	0.923
EI10:	I always tell myself I am a competent person.		0.863	0.913
EI11:	I am a self-motivating person.		0.859	0.914
EI12:	I would always encourage myself to try my best.		0.787	0.921
EI15:	I can always calm down quickly when I am very angry.		0.677	0.931

Table 5-12 Reliability Test for Safety Behaviour

Constructs		Cronbach Alpha	Corrected item-total correlation	Alpha if item deleted
Safety Behaviour from Leader Perspective (Mean=4.15; S.D.=0.5785)		0.915		
LSB8	My subordinate complies with safety rules and standard operational procedures.		0.683	0.904
LSB9	My subordinate has safety awareness at work		0.794	0.896
LSB10	My subordinate does not neglect safety, even when in a rush		0.668	0.906
LSB12	My subordinate wears personal protective equipment at work		0.772	0.895
LSB13	My subordinate participates in setting safety goal.		0.776	0.895
LSB11	My subordinate actively provides safety improvement suggestions.		0.740	0.898
LSB14	My subordinate actively participates in safety meetings		0.746	0.898

5.2 Structural Equation Modelling Results

Structural equation modelling was employed to test the research hypotheses. Before testing the hypotheses, the measurement model must be purified. Two-step approach suggested by Anderson and Gerbing (1988) was employed to analyse the data. First, confirmatory factor analysis with a multiple-indicator measurement model was performed to assess the validity of the measurement model. Once the measurement model was validated, the researcher proceeded to the second step, estimating the structural model between latent variables (Anderson and Gerbing, 1988).

It is important to note that, with regard to estimation of the measurement model for constructs, it is necessary to ensure that each construct with more than one variable. This is because the construct is made 'scale invariant' during the estimation procedure—in other words, the indicators of a construct are 'standardized in such a way as to make constructs comparable' (Joreskog and Sorbom, 1996; Koufteros, 1999).

5.2.1 Confirmatory Factor Analysis Results

Confirmatory factor analysis (CFA) involves the specification and estimation of one or more hypothesised models of factor structure, each of which proposes a set of latent variables (factors) to account for covariances among a set of observed variables (Koufteros, 1999). The hypothesised model, presented in Figure 3-1, implies a measurement model with six variables (constructs) and indicators (measures or items).

In Figure 5-1, six latent variables in the measurement model—namely, safety climate, leader–member exchange, organisational citizenship behaviour, job stress,

emotional intelligence, and safety behaviour—are intercorrelated, as indicated by the two-headed arrows. Figure 5-1 shows that 22 observed variables are enclosed in square. Two observed variables (SCT1 and SCT2) and seven observed variables (LMX1 to LMX7) are loaded onto safety climate and leader–member exchange, respectively. Organisational citizenship behaviour consists of two observed variables (OCBT1 and OCBT2), whereas job stress comprises JST1 and JST2. Emotional intelligence includes two observed variables (EIT1 and EIT2) and employees' safety behaviour includes seven observed variables from LSB8 to LSB14.
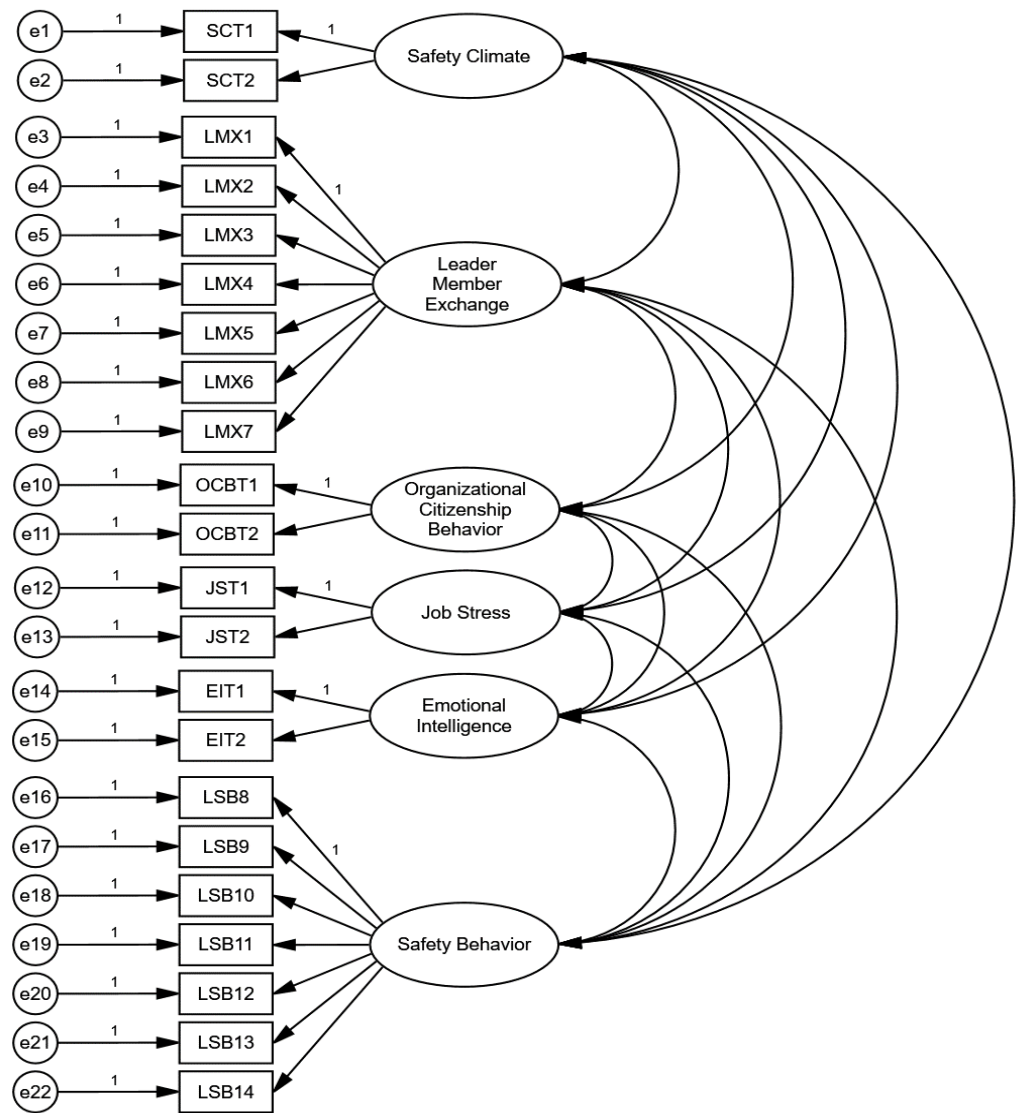
Figure 5-1 Path Diagram Representing the Measurement Initial Model

Note:
SCT1: Safety management
LMX1: My supervisor is satisfied with my working performance.
LMX3: My supervisor recognizes my potential.
LMX5: Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense
LMX6: My supervisor would defend and justify my decision if I was not present to do so.
OCBT1:Helping behaviour.
EIT1: Regulation of emotion
LSB8: My subordinate complies with safety rules and standard operational procedures.
LSB10: My subordinate does not neglect safety, even when in a rush.
LSB12: My subordinate wears personal protective equipment at work
LSB14: My subordinate actively participates in safety meetings.

SCT2: Safety policy
LMX2: My supervisor understands my job problems and needs.
LMX4: Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.
LMX7: I have a good working relationship with my supervisor.
OCBT2:Compliance.
EIT2: Self-emotional appraisal
LSB9: My subordinate has safety awareness at work
LSB11: My subordinate actively provides safety improvement suggestions.
LSB13: My subordinate participates in setting safety goal.

It is important to note that the estimation of the measurement model for constructs and ensure that each construct with more than one variable. This is because the construct is made 'scale invariant' during the estimation procedure. In other words, the indicators of a construct are 'standardized in such a way as to make constructs comparable' (Jöreskog and Sörbom, 1996; Koufteros, 1999). To consider the scale invariant, one of the loadings in each construct (SCT1, LMX1, OCBT1, JST1, EIT1, and LSB8) can be set to a fixed value of 1.0 (Koufteros, 1999). The statistical criteria for model modification decisions include offending estimates, squared multiple correlations, standardized residual covariances, and model fit indices (Koufteros, 1999; Min and Mentzer, 2004). Once the proposed model has been purified, tests of validity, reliability, and unidimensionality can be performed.

Confirmatory Factor Analysis Results – Initial Model

Table 5-13 showed that the initial model was found to be discredited. The $\chi 2$ value ($\chi 2(194) =1461.422$, p=0.000) was statistically significant at the 0.05 level of significance, indicating that differences between the model-implied covariance

matrix and data-observe data were significantly large. Accordingly, results implied that the initial model needed to be modified. The model modification decision was based on the aforementioned statistical criteria.

Results, shown in Table 5-13, indicated that all squared correlations values exceeded the recommended cut-off point of 0.3 (Carr and Pearson, 1999; Hair *et al.*, 2010). An inspection of the standardised residuals was subsequently conducted. According to the standardised residual matrix as indicated in Table 5-14, the residual value of one standardised residual pair (LMX5 and EIT1; LSB11 and EIT1; LSB13 and LSB14) exceeded the value of 2.00 in absolute terms, and the residual value of LMX6 and LSB8 was more than 4.20. The items LMX4, LMX5, LSB11 LSB13, and LSB14 were therefore deleted in reviser model eliminated in the initial model.

Confirmatory Factor Analysis Results – Modified Model

As show in Figure 5-2, one of the loadings in each construct (i.e., SCT1, LMX1, OCBT1, JST1, EIT1, and LSB8) can be set to a fixed value of 1.0 (Koufteros, 1999). The statistical criteria for model modification decisions include offending estimates, squared multiple correlations, standardised residual covariances, and model fit indices (Koufteros, 1999; Min and Mentzer, 2004). Once the proposed model has been purified, tests of validity, reliability, and unidimensionality can be performed.

Table 5-13 Parameter Estimate, Standard Errors, Critical Ratios, and R^2 for the Initial Model

Latent variable	Item	Unstandardized factor loading	Completely standardized factor loading	Standard error a	Critical Ratio b	R^2
Safety Climate						
	SCT1	1.000	0.800	--c	--	0.639
	SCT2	1.210	0.904	0.072	16.744	0.817
Leader-member exchange						
	LMX1	1.000	0.796	--	--	0.634
	LMX2	1.164	0.872	0.064	18.191	0.761
	LMX3	1.189	0.896	0.063	18.881	0.803
	LMX4	1.192	0.802	0.074	16.196	0.642
	LMX5	0.874	0.527	0.090	9.733	0.278
	LMX6	0.956	0.629	0.080	11.953	0.396
	LMX7	1.164	0.841	0.067	17.287	0.707
Organizational Citizenship Behaviour						
	OCBT1	1.000	0.611	0.087	11.425	0.374
	OCBT2	0.990	0.785	--	--	0.616
Job Stress						
	JST1	1.000	0.396	--	--	0.157
	JST2	1.129	0.960	0.363	5.865	0.922
Emotional Intelligence						
	EIT1	1.000	0.751	--	--	0.564
	EIT2	1.115	0.848	0.073	15.200	0.718
Safety Behaviour						
	LSB8	1.000	0.712	--	--	0.506
	LSB9	0.926	0.816	0.066	14.036	0.666
	LSB10	1.061	0.703	0.088	12.105	0.494
	LSB11	1.309	0.814	0.093	14.003	0.663
	LSB12	1.119	0.827	0.079	14.210	0.683
	LSB13	1.229	0.786	0.091	13.523	0.618
	LSB14	1.283	0.798	0.093	13.725	0.636

Goodness-of-fit statistics

$\chi^2(194) = 1461.422$, $p<0.000$, $\chi^2/df=7.533$; GFI=0.720; AGFI=0.635; CFI=0.769; RMR=0.035; TLI=0.725

Note: a. S.E. is an estimate of the standard error of the covariance.

b. C.R. is the critical ratio obtained by dividing the estimate of the covariance by its standard error. A value exceeding 1.96 represents a level of significance of 0.05.

c. Indicates a parameter fixed at 1.0 in the original solution.

Table 5-14 Standardized Residuals (Initial Model)

	OCBT1	OCBT2	JST1	JST2	EIT1	EIT2	LSB8	LSB9	LSB10	LSB11	LSB12	LSB13	LSB14	SCT1	SCT2	LMX1	LMX2	LMX3	LMX4	LMX5	LMX6	LMX7
OCBT1	.000																					
OCBT2	.000	.000																				
JST1	1.699	-.369	.000																			
JST2	1.134	-.527	.000	.000																		
EIT1	-.822	-.329	-.548	.725	.000																	
EIT2	1.114	-.110	.072	-.394	.000	.000																
LSB8	2.470	1.352	.791	1.720	.910	2.641	.000															
LSB9	-.703	1.718	-.014	.098	-1.271	1.325	2.022	.000														
LSB10	-.877	1.564	-.370	.033	-1.389	1.164	2.838	1.953	.000													
LSB11	-.809	-1.003	-.072	-.998	-2.427	.605	-1.290	.206	1.738	.000												
LSB12	.263	-1.110	-.872	-.514	-2.714	.309	-1.778	-.834	-1.269	.726	.000											
LSB13	-.023	-.669	1.291	.796	-.876	1.262	-.487	-1.503	-2.301	-.527	1.484	.000										
LSB14	-1.516	.137	.024	-.306	-2.300	-.042	-.437	-.376	-2.416	-.748	.666	2.460	.000									
SCT1	-1.687	1.785	-.454	1.353	1.513	.635	.392	1.013	-.615	-1.446	-.634	-.181	-.808	.000								
SCT2	-1.096	.052	-1.067	-.553	-.316	-.472	2.973	.613	.844	-.686	-.443	-.589	-.281	.000	.000							
LMX1	2.027	-.062	-.320	1.654	.740	2.136	1.178	.359	.675	.558	.575	-1.453	-1.567	-1.458	-.536	.000						
LMX2	-1.041	.024	-1.627	-.457	.124	-1.074	.499	-.343	.033	-.869	.799	-1.194	-.127	-1.625	.100	.142	.000					
LMX3	-.495	.656	-1.562	.578	.856	1.132	.371	-1.116	.936	-.459	-.094	-1.099	-.447	-.882	.213	.842	.623	.000				
LMX4	-3.098	-1.155	-2.831	-2.440	-2.579	-3.610	.467	.195	-.071	-.244	.679	-1.290	.143	-2.161	.051	-1.571	.677	-.606	.000			
LMX5	-1.628	-1.375	-.550	-2.425	-3.503	-2.246	1.777	1.283	-.496	-.482	.124	1.431	2.243	-.889	.417	-3.104	.433	-.904	3.006	.000		
LMX6	1.716	1.259	1.016	1.308	.294	.831	4.265	2.370	1.532	.893	-.814	.210	1.758	.018	1.170	.950	-.699	-1.641	.437	2.775	.000	
LMX7	-.867	1.457	-2.217	.778	.875	.908	2.528	.781	-.390	-.791	-.005	-.829	.759	1.181	1.706	.256	-1.271	-.124	.820	-.118	1.176	.000
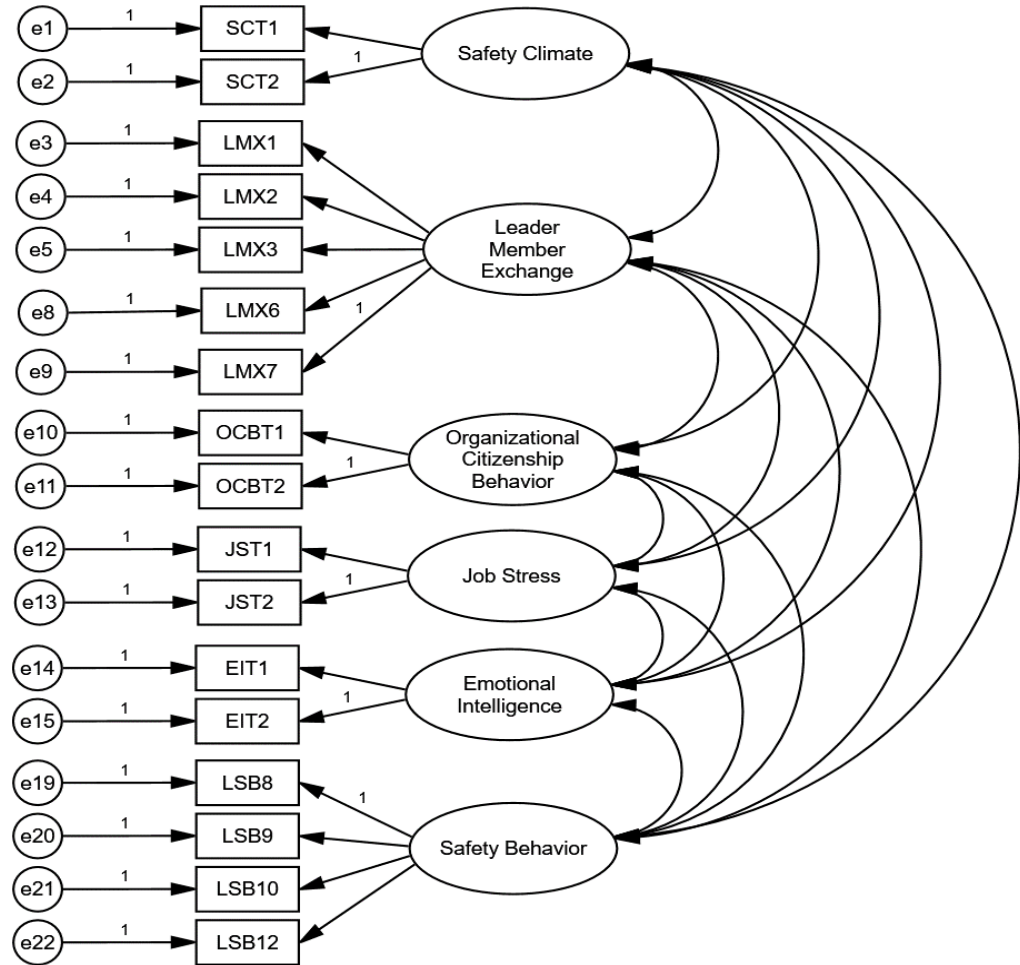
Figure 5-2 Path Diagram Representing the Measurement Modified Model

Table 5-15 shows that the modified model was found to be discredited. The χ^2 value ($\chi^2(104)$ =596.768, p=0.000) was statistically significant at the 0.05 level of significance. Accordingly, results implied that the model needed to be modified again. The model modification decision was based on the aforementioned statistical criteria. In Figure 5-3, it still keeps the scale invariant, and one of the loadings in each construct (i.e. SCT1, LMX1, OCBT1, JST1, EIT1, and LSB9) can be set to a fixed value of 1.0, as shown in Figure 5-3 (Koufteros, 1999).

Table 5-15 Parameter Estimate, Standard Errors, Critical Ratios, and R^2 for the Modified Model

Latent variable	Item	Unstandardized factor loading	Completely standardized factor loading	Standard error a	Critical Ratio b	R^2
Safety Climate						
	SCT1	1.000	0.805	--c	--	0.649
	SCT2	1.193	0.897	0.072	16.603	0.805
Leader-member exchange						
	LMX1	1.000	0.835	--	--	0.698
	LMX2	1.088	0.856	0.057	19.069	0.733
	LMX3	1.159	0.916	0.055	21.221	0.839
	LMX6	0.874	0.604	0.075	11.695	0.364
	LMX7	1.086	0.823	0.061	17.920	0.677
Organizational Citizenship Behaviour						
	OCBT1	1.000	0.608	--	--	0.370
	OCBT2	1.000	0.789	0.088	11.393	0.623
		Job Stress				
	JST1	1.000	0.397	--	--	0.158
	JST2	2.123	0.959	0.361	5.887	0.919
Emotional Intelligence						
	EIT1	0.897	0.751	--	--	0.569
	EIT2	1.000	0.848	0.072	15.259	0.712
Safety Behaviour						
	LSB8	1.000	0.811	--	--	0.658
	LSB9	0.879	0.883	0.051	17.308	0.779
	LSB10	1.060	0.800	0.068	15.643	0.639
	LSB12	0.779	0.656	0.064	12.246	0.430

Goodness-of-fit statistics

$\chi^2(104) = 596.768$, $p < 0.000$, $\chi^2/df = 5.738$; GFI=0.833; AGFI=0.754; CFI=0.865; RMR=0.026; TLI=0.823

Note: a. S.E. is an estimate of the standard error of the covariance.

b. C.R. is the critical ratio obtained by dividing the estimate of the covariance by its standard error. A value exceeding 1.96 represents a level of significance of 0.05.

c. Indicates a parameter fixed at 1.0 in the original solution.
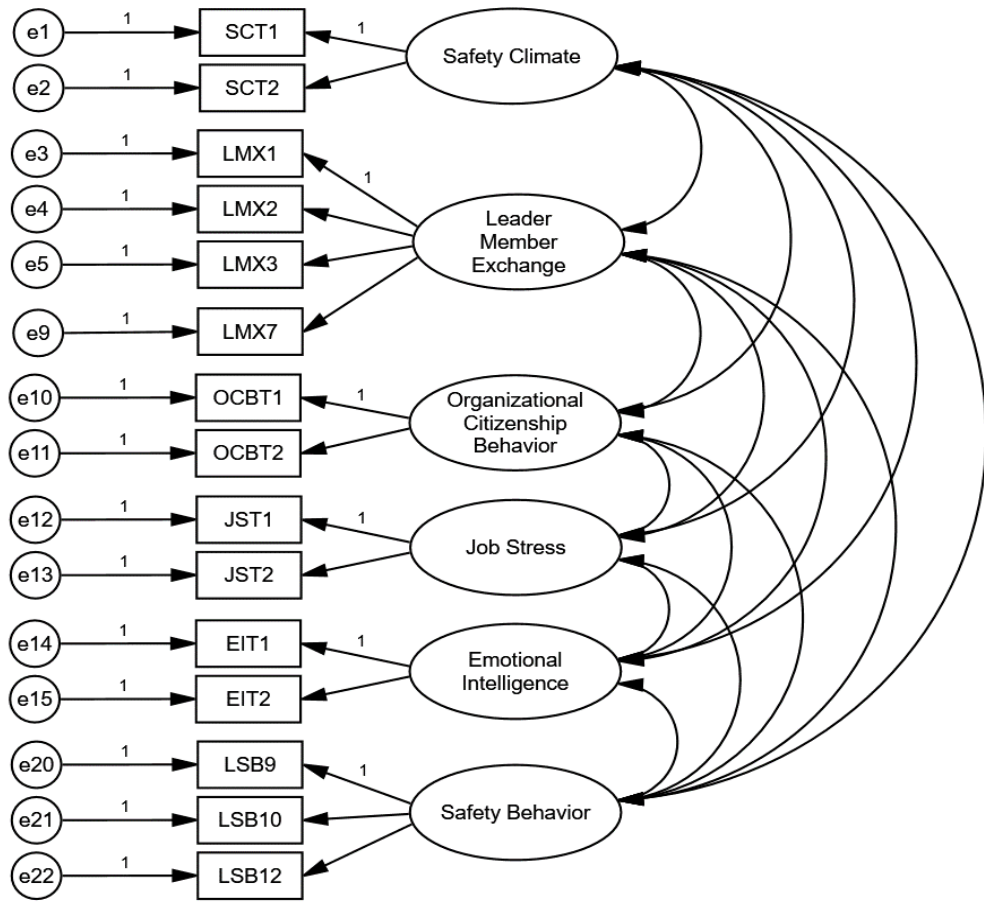
Figure 5-3 Path Diagram Representing the Measurement Trimmend Model

The trimmed model was still found statistically significant at the 0.05 level of significance, indicating the model needed to be modified again as shown in Table 5-16. Figure 5-4 keeps the scale invariant, and one of the loadings in each construct (i.e. SCT1, LMX1, OCBT1, JST1, EIT1, and LSB9) can be set to a fixed value of 1.0 (Koufteros, 1999). The statistical criteria for model modification decisions include offending estimates, squared multiple correlations, standardised residual covariances, and model fit indices (Koufteros, 1999; Min and Mentzer, 2004). Once the proposed model has been purified, tests of validity, reliability, and unidimensionality can be performed.

Table 5-16 Parameter Estimate, Standard Errors, Critical Ratios, and R^2 for the Trimmed Model

Latent variable	Item	Unstandardized factor loading	Completely standardized factor loading	Standard error a	Critical Ratio b	R^2
Safety Climate						
	SCT1	1.000	0.810	--c	--	0.652
	SCT2	1.187	0.892	0.072	16.563	0.801
Leader-member exchange						
	LMX1	1.000	0.796	--	--	0.680
	LMX2	1.108	0.872	0.059	18.910	0.740
	LMX3	1.203	0.896	0.056	21.448	0.881
	LMX7	1.074	0.841	0.063	17.036	0.645
Organizational Citizenship Behaviour						
	OCBT1	1.000	0.605	--	--	0.366
	OCBT2	1.010	0.793	0.089	11.347	0.629
Job Stress						
	JST1	1.000	0.397	--	--	0.158
	JST2	2.119	0.958	0.359	5.895	0.918
Emotional Intelligence						
	EIT1	1.000	0.756	--	--	0.571
	EIT2	1.102	0.843	0.072	16.563	0.710
Safety Behaviour						
	LSB9	1.000	0.900	--	--	0.809
	LSB10	1.141	0.771	0.082	13.872	0.595
	LSB12	0.906	0.683	0.073	14.421	0.467

Goodness-of-fit statistics

$\chi 2(75) =374.073$, p<0.000, $\chi 2/df=4.988$; GFI=0.876; AGFI=0.802; CFI=0.902; RMR=0.022; TLI=0.863
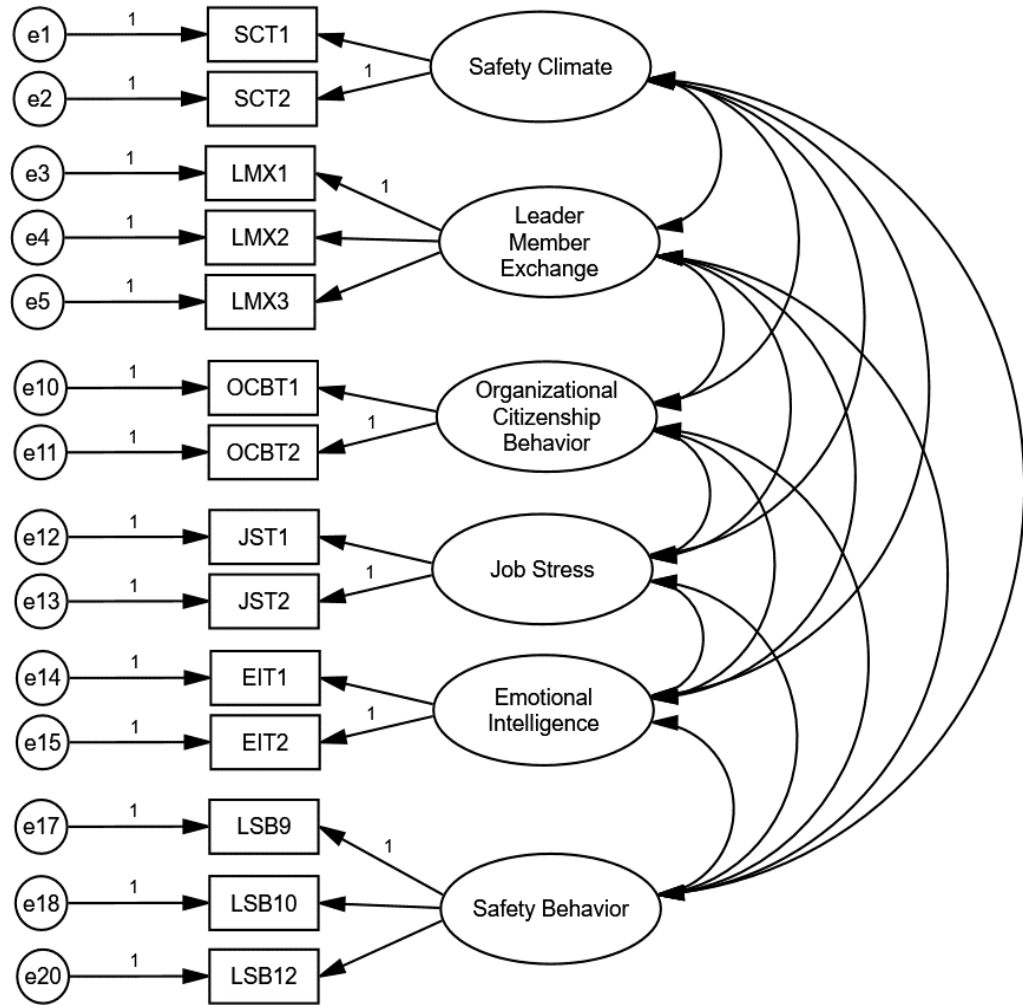
Figure 5-4 Path Diagram Representing the Measurement Final Model

Table 5-17 shows that the final model was found to be discredited. The χ^2 value ($\chi^2(62) = 275.224$, p=0.000) was statistically significant at the 0.05 level of significance. Results, shown in Table 5-17, indicated that all squared correlations values exceeded the recommended cut-off point of 0.3 (Carr and Pearson, 1999; Hair *et al.*, 1998). An assessment of the standardised residuals was subsequently conducted.

Table 5-17 Parameter Estimate, Standard Errors, Critical Ratios, and R^2 for the Final Model

Latent variable	Item	Unstandardized factor loading	Completely standardized factor loading	Standard error a	Critical Ratio b	R^2
Safety Climate						
	SCT1	1.000	0.810	--c	--	0.656
	SCT2	1.179	0.892	0.072	16.396	0.796
Leader-member exchange						
	LMX1	1.000	0.815	--	--	0.664
	LMX2	1.133	0.869	0.060	18.775	0.756
	LMX3	1.229	0.947	0.060	20.525	0.898
Organizational Citizenship Behaviour						
	OCBT1	1.000	0.605	--	--	0.366
	OCBT2	1.012	0.794	0.089	11.337	0.630
Job Stress						
	JST1	1.000	0.399	--	--	0.159
	JST2	2.105	0.955	0.355	5.927	0.912
Emotional Intelligence						
	EIT1	1.000	0.756	--	--	0.571
	EIT2	1.101	0.842	0.355	5.927	0.710
Safety Behaviour						
	LSB9	1.000	0.898	--	--	0.806
	LSB10	1.146	0.773	0.083	13.853	0.598
	LSB12	0.908	0.683	0.073	12.395	0.467

Goodness-of-fit statistics

$\chi^2(62) = 275.224$, $p < 0.000$, $\chi^2/df = 4.439$; GFI=0.899; AGFI=0.828; CFI=0.920; RMR=0.020; TLI=0.883

Note: a. S.E. is an estimate of the standard error of the covariance.

b. C.R. is the critical ratio obtained by dividing the estimate of the covariance by its standard error. A value exceeding 1.96 represents a level of significance of 0.05.

c. Indicates a parameter fixed at 1.0 in the original solution.

A number of goodness-of-fit indices have been recommended to assess the fit and unidimensionality of the measurement model (Bagozzi and Yi, 1988; Hu and Bentler, 1995; Kline, 1998; Koufteros, 1999). Table 5.16 shows that the goodness-of-fit index (GFI) and comparative fit index (CFI) had values of 0.899 and 0.920, respectively. Both measures of incremental fit all exceeded the recommended level of 0.9. The adjusted goodness-of-fit (AGFI) was 0.828, also exceeding the recommended level of 0.8.

In addition, the root means square residual (RMR) were 0.020, respectively,

both below the threshold level of 0.05. The normed Chi-Square ($\chi2/df$) also had a value of 4.439. This fell well within the recommended range for model parsimony. In summary, the various overall goodness-of-fit measures for the model lent sufficient support for the results to be deemed an acceptable representation of the hypothesized constructs. The final model indicated in Table 5-17 provided an adequate model fit indicating that the proposed model was purified and acceptable. The model modification processes are summarised in Table 5-18. The tests of validity, reliability, and unidimensionality are discussed and described below.

Table 5-18 Model Modification Processes

	Variable deleted	χ^2	χ^2/df	GFI	AGFI	RMR	P value
Initial Model	---------	1461.422	7.533	0.720	0.635	0.035	0.000
Modified Model	LMX4, LMX5, LSB11, LSB13, LSB14	596.768	5.738	0.833	0.754	0.026	0.000
Trimmed Model	LMX6, LSB8	374.073	4.988	0.876	0.802	0.022	0.000
Final Model	LMX7	275.224	4.439	0.899	0.828	0.020	0.000

5.2.2   *Convergent Validity and Item Reliability*

Convergent validity can be tested by t-values that are all statistically significant for the factor loadings (Dunn *et al.*, 1994). The t-value in the AMOS text output file is the critical ratio (C.R.), which represents the parameter estimate divided by its standard error. The larger the factor loadings as compared with their standard errors and expressed by the corresponding C.R. values, the stronger the evidence that the measured factors represent the underlying constructs (Bollen, 1989; Koufteros, 1999). As a rule of thumb, the C.R. needs to be greater than 1.96 or smaller than –1.96 for the estimate to be acceptable (Byrne, 2001; Hair *et al.*, 1998; Koufteros, 1999). Table 5-17 show that all C.R. values were significant at

the 0.05 level, effectively confirming that all indicators measured the same construct and providing satisfactory evidence of the convergent validity and unidimensionality of each construct (Anderson and Gerbing, 1988).

Item reliability refers to the R^2 value in the observed variables that are accounted for by the latent variables influencing them. Thus, R^2 values can be used to measure the reliability of a particular observed variable (item) (Koufteros, 1999). R^2 values typically above 0.3 provide evidence of acceptable reliability (Hair *et al.*, 1998; Carr and Pearson, 1999). Table 5-17 shows the squared correlations for the 14 items. Results revealed that all R^2 values were greater than 0.3, providing evidence of convergent validity (Hair *et al.*, 1998; Carr and Pearson, 1999).

5.2.3 *Standardized Residuals*

Another indication of the internal quality of a measurement model can be achieved by a close examination of the standardised residuals (Bagozzi and Yi, 1988). The *standardised residuals*, or so-called *normalised residuals* provided by the AMOS program, represent the differences between the observed correlation/covariance and the estimated correlation/covariance matrix. Small fitted residuals indicate good fit, although their size depends on the unit of measures of the observed variables. To ease interpretation, residuals are standardised by dividing them by their asymptotic standard errors (Jöreskog, 1993). Standardised residuals with values larger than 2.00 in absolute terms are considered statistically significant at the 0.05 level, indicating that significant amounts of variances remain unexplained and that a specification error is likely (Hair *et al.*, 2010; Koufteros, 1999).

Table 5-19 Standardized Residuals (Final model)

	OCBT1	OCBT2	JST1	JST2	EIT1	EIT2	LSB9	LSB10	LSB12	SCT1	SCT2	LMX1	LMX2	LMX3
OCBT1	.000													
OCBT2	-.304	.000												
JST1	1.987	-.147	.000											
JST2	1.521	-.374	.003	.000										
EIT1	-.563	-.306	-.313	.925	.000									
EIT2	1.274	-.251	.261	-.347	-.129	.000								
LSB9	-1.163	.952	-.054	-.111	-1.790	.638	.032							
LSB10	-1.274	.903	-.404	-.146	-1.837	.571	.102	.023						
LSB12	.773	-.600	-.584	.090	-2.091	.967	.104	-.436	.018					
SCT1	-1.764	1.383	-.948	-.055	1.716	.719	.489	-1.060	-.068	.000				
SCT2	-.896	-.006	-1.488	-1.758	.199	-.051	.212	.498	.337	-.009	.000			
LMX1	2.045	-.242	-.579	.824	.425	1.662	.525	.821	2.083	-1.214	.037	.000		
LMX2	-.887	.004	-1.838	-1.161	-.051	-1.376	-.019	.320	2.568	-1.169	.945	-.059	.000	
LMX3	-.653	.220	-1.941	-.546	.286	.370	-1.129	.929	1.421	-.867	.569	-.017	.025	.000

Accordingly, pairs of measures showing standardised residuals greater than 2.00 indicate the area of misspecification. Table 5-19 illustrates that none of the standardised residual values exceeded 2.58 in absolute terms. This provided additional evidence of model fit and of no apparent misspecifications.

5.2.4 Discriminant Validity

It is possible to test discriminant validity by comparing the average variance extracted (AVE) with the squared correlation between constructs. *Discriminant validity* exists if the items share more common variance with their respective constructs than any variance that the construct shares with other constructs (Fornell and Larcker, 1981; Koufteros, 1999). In Table 5-20, the AVE for a construct should be substantially higher than the squared correlation between the construct and all other constructs. Table 5-20 also shows that among the AVEs of the measures, organisational citizenship behaviour had the lowest value of 0.519, indicating that 51.9% of the variance in the specified indicators was accounted for by the construct, and the average variance extracted value of each construct in our model was higher than the recommended level of 50% (Fornell and Larcker, 1981; Bogzzi and Yi, 1988).

Evidence of discriminant validity is also provided by the AVE method presented. The highest squared correlation was 0.518, which was observed between job stress and emotional intelligence. This was significantly lower than their individual AVE values of 0.536 and 0.640, respectively. The results demonstrated evidence of discriminant validity for the study variables.

Table 5-20 Assessment of Discriminant Validity

Measures	AVE a	OCB	JS	EI	SB	SC	LMX
Organizational Citizenship Behaviour	0.498	1					
Job Stress	0.536	0.697** (0.486) c	1				
Emotional Intelligence	0.640	0.682** b (0.465)	0.720** (0.518)	1			
Safety Behaviour	0.623	0.428** (0.183)	0.206** (0.042)	0.378** (0.143)	1		
Safety Climate	0.726	0.656** (0.430)	0.475** (0.226)	0.748** (0.560)	0.354** (0.125)	1	
Leader-member exchange	0.772	0.566** (0.320)	0.410** (0.168)	0.579** (0.335)	0.420** (0.176)	0.646** (0.417)	1

Note: a. Average variance extracted (AVE) = (sum of squared standardized loadings)/[(sum of squared standardized loadings)+(sum of indicator measurement error)]; Indicator measurement error can be calculated as 1-(standardized loading)2.
b. **correlation is significant at the 0.01 level.
c. Squared correlation.

5.2.5 Composite Reliability and Variance Extracted Measures

To assess whether the specified indicators sufficiently represented the constructs, estimates of the composite reliability and variance extracted measures for each construct were conducted. *Composite reliability* provides a measure of the internal consistency and homogeneity of the items comprising a scale (Iacobucci and Churchill, 2010). This indicates that a set of latent indicators of a construct are consistent in their measurement. The reliability of a construct can be estimated using AMOS output. In more formal terms, this reliability is the degree to which a set of two or more indicators share the measurement of a construct. Highly reliable constructs are those in which the indicators are highly intercorrelated, indicating that they are all measuring the same latent construct. Values for reliability range between 0 and 1. As can be seen in Table 5-21, the reliability of the constructs of organisational citizenship behaviour (OCB), job

stress (JS), emotional intelligence (EI), safety behaviour (SB), safety climate (SC), and leader–member exchange (LMX) scales were 0.679, 0.676, 0.788, 0.830, 0.841 and 0.910, respectively. All constructs therefore exceeded the recommended level of 0.60 (Bagozzi and Yi, 1988; Hair *et al.*, 1998).

In addition, a complementary measure to assess the composite reliability is the average variance extracted. The *average variance extracted* statistics measure the amount of variance in the specified indicators accounted for by the latent construct. Higher variance extracted values occur when the indicators are truly representative of the latent construct. Typically, recommendations suggest that the variance extracted value should exceed 0.50 for a construct (Bagozzi and Yi, 1988; Fornell and Larcker, 1981; Hair *et al.*, 1998). To summarise, the overall results of the goodness-of-fit of the model and the assessment of the measurement model lent substantial support to confirming the proposed model.

Table 5-21 Descriptive Statistics and Composite Reliability for Each Measure

Measures	Mean [a]	S.D. [b]	Composite reliability [c]
Organizational Citizenship Behaviour	4.11	0.511	0.661
Job Stress	4.11	0.464	0.664
Emotional Intelligence	4.04	0.534	0.780
Safety Behaviour	3.96	0.546	0.831
Safety Climate	4.23	0.394	0.841
Leader-member exchange	3.92	0.617	0.910

a. The mean scores of job stress (JS), employees' safety behaviour (SB), emotional intelligence (EI), organizational citizenship behaviour (OCB), leader-member exchange (LMX) and safety climate (SC) are based on a five-point scale where 1 =very poor to 5= excellent.
b. S.D.=standard deviation.
c. Composite reliability = (sum of standardized loadings)2/[(sum of standardized loadings) 2+(sum of indicator measurement error)]; Indicator measurement error can be calculated as 1-(standardized loading)2.

5.2.6   *Estimation of the Structural Model*

After confirming and establishing a good model fit for the measurement model, this study proceeded to assess the proposed structural model and examine the hypothesised relationships. An estimated model is shown in Figure 5-5, five variables were evaluated in this model, including one exogenous variable, safety climate, and five endogenous variables, namely, LMX, OCB, JSB, EI, and SB.
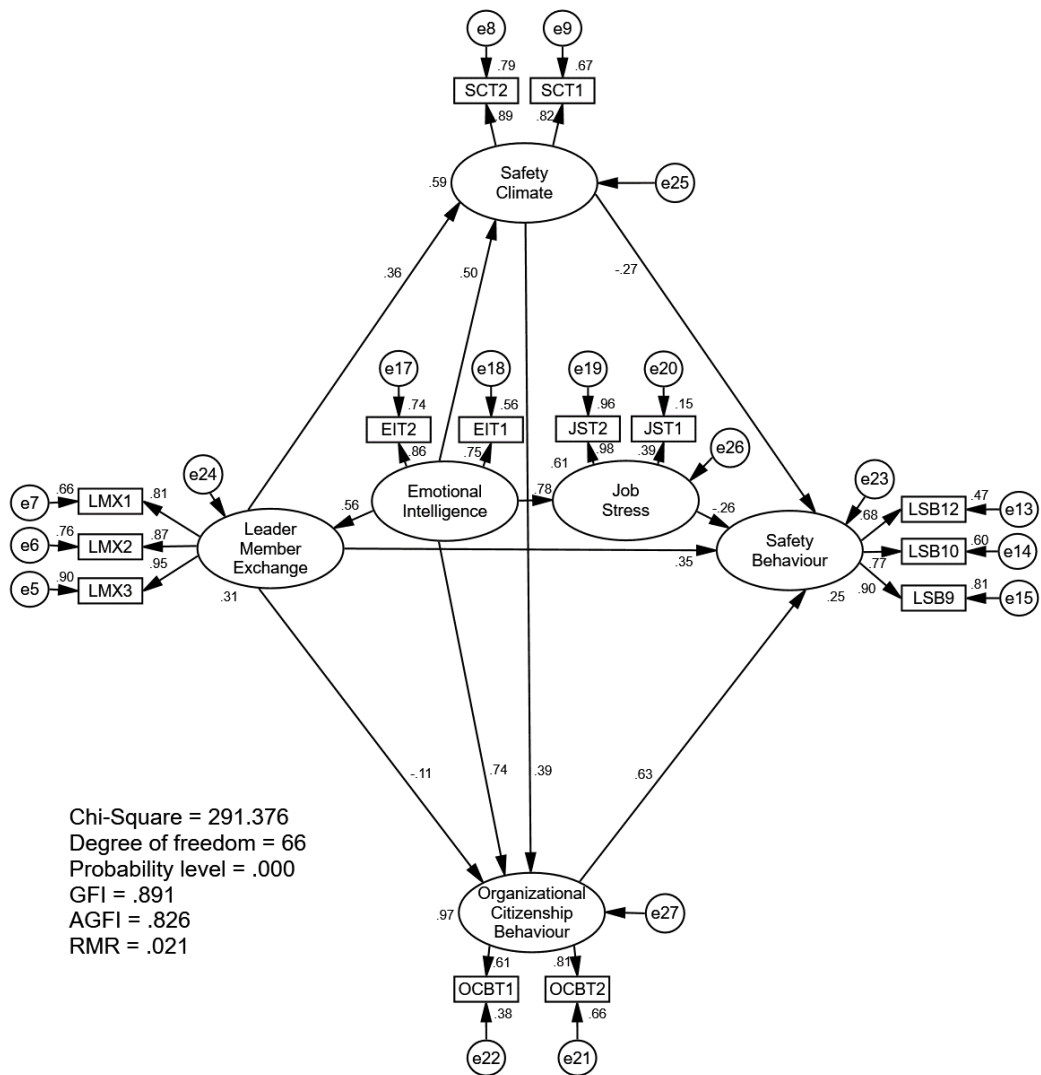
Figure 5-5 Structural Equation Modeling Results

Results shown in Table 5-22 indicate that the data adequately supported the estimated model. The Chi-Square statistic ($\chi2 = 291.376$, df = 66) at 0.000 is below the threshold level of 0.05 significance, which suggests the differences in predicted

and actual matrices are insignificant. In addition, the goodness-of-fit index (GFI) was calculated to be 0.891, and the adjusted goodness-of-fit index (AGFI) yielded 0.826, after adjustment was made for degrees of freedom relative to the number of variables. This indicates 89.1 per cent of the variance and covariance in the data observed were predicted by the estimated model. Moreover, the results of fitting the structural model to the data revealed that the model had a good fit as indicated by the normed Chi-Square ($\chi2/df=4.415$), comparative fit index (CFI=0.917), and root mean square residual (RMR=0.021).

Table 5-22 Goodness-of-fit Statistics of the Final Model

Goodness-of-fit statistics	Value	Outcome
Nonsignificant χ^2	$\chi^2(66) =291.376$, p=0.000	Accepted
$\chi^2/df <5$	4.415	Accepted
GFI>0.8	0.891	Accepted
AGFI>0.8	0.826	Accepted
CFI>0.8	0.917	Accepted
RMR<0.05	0.021	Accepted

5.3 Hypotheses Testing Results and Discussions

Table 5-23 summarises the results of hypotheses testing. Results revealed that most hypothesised relationships were significant and in the expected direction, except for the paths from safety climate to safety behaviour (estimate= -0.271, C.R.=-1.573>-1.96) and LMX to OCB (estimate= -0.107, C.R.= -1.738>-1.96), which were not significant. Thus, H_1 and H_5 were not supported in this study. Although the findings did not support the direct effect of safety climate on safety behaviour, this did not mean safety climate was not important in container terminal operations. Safety climate could indirectly affect safety behaviour via EI, OCB, and JS. This entails that the influence of safety climate on safety behaviour could be fully mediated by the influence of LMX, EI, OCB, and JS.

The research findings also did not provide evidence for the relationship between LMX and OCB. This was not surprising. Organ (1988) explained that OCB is a personal discretionary behaviour, which is not part of the job task. Employees' OCBs may not be affected by their relationships with their supervisors or leaders. However, the indirect of LMX could affect employees' OCBs via safety climate.

Table 5-23 Structural Equation Modeling Results

Paths	Hypotheses		Results Estimate. [a]	S. E. [b]	C.R. [c]	P
SC → SB	H1	—	-0.271	0.144	-1.573	0.116
SC → OCB	H2	+	0.389	0.061	4.609	0.000**
LMX → SC	H3	+	0.365	0.065	5.992	0.000**
LMX → SB	H4	+	0.352	0.088	4.024	0.000**
LMX → OCB	H5	—	-0.107	0.050	-1.738	0.082
EI → LMX	H6	+	0.558	0.065	9.033	0.000**
EI → OCB	H7	+	0.737	0.069	9.087	0.000**
EI → JS	H8	+	0.783	0.051	15.517	0.000**
EI → SC	H9	+	0.502	0.267	7.755	0.000**
OCB → SB	H10	+	0.629	0.250	2.921	0.003*
JS → SB	H11	—	-0.263	0.127	-1.954	0.048*

Note: a. Results estimate is completely standardized factor loading from final SEM model.
  b. S.E. is an estimate of the standard error of the covariance
  c. C.R. is the critical ratio obtained by dividing the estimate of the covariance by its standard error. A value exceeding 1.96 represents a level of significance of 0.05.

Table 5-23 shows that safety climate was found to have a positive relationship with OCB (estimate=0.389, C.R.=4.609>1.96). Thus, H_2 was supported in this study. The findings imply that container terminal operators with a high degree of safety climate will have higher employee OCBs. The result was consistent with Lee *et al.*'s (2007) study.

This study found that LMX had a positive effect on both safety climate and employees' safety behaviour. Thus, H_3 and H_4 were supported. The finding implies

that the high quality of LMX between leaders and followers will improve safety climate and employees' safety behaviour. The finding was consistent with previous studies (Bass, 1990; Hofmann and Morgeson, 1999; Jordan and Troth, 2010; Xhou and Jiang, 2015; Schneider, 1990; Hofmann and Stetzer, 1996; Zohar, 2000; Hofmann and Morgeson, 2003).

Specifically, results indicated that emotional intelligence had a positive effect on LMX (estimate=0.558, C.R.=9.033>1.96). Thus, H_6 is supported. The findings are consistent with previous studies (Dasborough; 2006; Dasborough and Ashkanasy, 2002; Kamdar and van Dyne, 2007).

This study also found that employees' emotional intelligence was positively related to OCB (estimate=0.737, C.R.=9.087>1.96), and job stress (estimate=0.783, C.R.=15.517>1.96). Thus, H_7 and H_8 were supported. The findings suggest that employees with high-level emotional intelligence and the ability to control their emotions will be better on OCB, and job stress to improve their safety behaviour in operations. The results were consistent with prior studies of Carmeli and Josman (2006), Jung and Yoon (2012), Lu and Kuo (2016), and Siu (2009).

In addition, this research found that H_9: Emotional intelligence was positively related to safety climate (estimate=0.502, C.R.=7.755>1.96). Thus, H_9 was supported. The findings also reflected that H_{10}: Employees was positively related to employees' safety behaviour. The finding was consistent with those of previous studies by Hofmann and Morgeson, (2003), Hofmann and Stetzer, (1996), and Zohar, (2000). Results suggest container terminal firms could concern about employees' OCBs dimension on helping behaviour and job requirement to improve employees' safety behaviour.

Further, Table 5-23 also illustrates the coefficients (estimate=-0.263, C.R.=-1.954>-1.96) for job stress were negative and significant with safety behaviour based on the significance of 0.05. Results thus suggested that job stress negatively influenced safety behaviour. Thus, research hypothesis H_{11} was supported. The findings were consistent with those reported in previous research (Leung *et al.*, 2012; Lu and Kuo, 2016). Job stress was found to have negative influence on employees' safety behaviour in container terminal operations; this is a finding that must be considered by terminal managers. This implies that when job stress is high, employees' safety behaviours will be reduced. While the improvement of safety behaviour of container terminal employees is a key to reducing accidents or incidents, job stress should be a major concern in container terminal operations. This study suggests that is necessary to manage employees' job stress effectively through job allocation, rest time schedules, and sufficient provisions for stress management training and equipment.

5.4 Evaluation of Mediation Effect

Table 5-24 reports the summary of the test to determine the mediating effect of each path according to structural equation model in this study. Mediation effect testing is commonly performed in order to identify and confirm the type of mediation in the proposed structural equation model.

Table 5-24 shows the bootstrap test confirming the type of mediation. For example, the indirect effect of emotion intelligence on safety climate through LMX (EI → LMX → SC) is 0.204. Neither bias-corrected 95% confidence interval did not contain 0; also, the p-value is less than 0.05, indicating that LMX did play a significant intermediary role in the relationship between EI and SC.

Table 5-24 Summary of the Mediation Effect Test

	Estimate [a]	95% Confidence Interval		Results
		P value	BC [b]	
Indirect Effect				
EI → SC [C]	0.204	0.000	0.120~0.298	Significant
EI → OCB [d]	0.275	0.003	0.083~0.373	Significant
EI → SB [e]	0.504	0.000	0.286~0.515	Significant
Direct Effect				
EI → LMX	0.558	0.000	0.435~0.661	Significant
EI → SC	0.502	0.000	0.344~0.649	Significant
EI → OCB	0.737	0.001	0.524~0.951	Significant
EI → JS	0.783	0.000	0.646~0.915	Significant
LMX → SC	0.365	0.000	0.202~0.511	Significant
LMX → OCB	-0.107	0.155	-0.280~0.042	Non- significant
LMX → SB	0.352	0.000	0.186~0.559	Significant
SC → OCB	0.389	0.001	0.176~0.579	Significant
SC → SB	-0.271	0.111	-0.763~0.086	Non- significant
OCB → SB	0.629	0.024	0.141~1.392	Significant
JS → SB	-0.263	0.023	-0.892~-0.045	Significant
Total Effect				
EI → LMX	0.558	0.000	0.435~0.661	Significant
EI → SC	0.706	0.000	0.601~0.795	Significant
EI → OCB	1.000	0.000	0.874~1.071	Significant
EI → JS	0.783	0.000	0.646~0.915	Significant
EI → SB	0.504	0.000	0.286~0.515	Significant
LMX → SC	0.365	0.000	0.202~0.511	Significant
LMX → OCB	0.142	0.636	-0.125~0.173	Non- significant
LMX → SB	0.352	0.001	0.124~0.396	Significant
SC → OCB	0.389	0.001	0.176~0.579	Significant
OCB → SB	0.629	0.024	0.141~1.392	Significant
JS → SB	-0.263	0.023	-0.892~-0.045	Significant

Note: a. Estimate is completely standardized factor loading.
    b. BC is. Bias-corrected percentile method of 95% confidence interval.
    c. EI → SC means indirect effect path EI → LMX → SC
    d. EI → OCB means indirect effect path EI → SC → OCB,
      EI → LMX →OCB, and EI → LMX → SC → OCB, but EI → LMX →OCB could
      not be calculated because LMX → OCB is not significant.
    e. EI → SB means indirect effect path EI → JS → SB, EI → OCB → SB,
      EI → LMX → SB, EI → LMX → SC → OCB → SB, EI → SC → SB,
      EI → LMX → SC → SB, and EI → LMX → OCB → SB, but EI → SC → SB,
      EI → LMX → SC → SB, EI → LMX → OCB → SB could not be calculated because
      SC → SB and LMX → OCB are not significant.

In addition, the direct effect value of (EI → SC) is 0.502. In this case, neither

bias-corrected confidence interval contains 0; also, the P-value is less than 0.05.

Therefore, the direct effect is significant. Finally, the total effect value of (EI →

SC) is 0.706, with bias-corrected 95% confidence also not included 0 and p-value

less than 0.05. As indicated above, LMX did play a significant mediating role in the relationship between EI and SC, and its mediating effect is partial.

Table 5-24 also shown the result for all indirect effect values ranging from emotional intelligence to organisational citizenship behaviour through SC, LMX (EI → SC → OCB, and EI → LMX → SC → OCB) is 0.275. Also, the 95% trust interval of bias-corrected 95% confidence interval did not contain 0, and the p-value is also less than 0.05. Altogether, these indicate that LMX did play a significant intermediary role in the relationship between EI and OCB. In addition, the direct effect value of (EI → OCB) is 0.737, bias-corrected 95% confidence interval did not contain 0, and the p-value is also less than 0.05. Therefore, the direct effect is significant. Lastly, the total effect value of (EI → OCB) is 1.000; the bias-corrected 95% confidence interval did not contain 0, and the P value is less than 0.05. In this case, the total effect is significant. As indicated above, SC and LMX did play a significant mediating role in the relationship between EI and OCB, and its mediating effect is partial.

The result also indicated that the indirect effect value of EI → JS → SB and EI → OCB → SB, EI → LMX → SB, and EI → LMX → SC → OCB → SB is 0.503, and both bias-corrected 95% confidence interval did not contain 0, and the p-value is less than 0.05. Therefore, JS, OCB, LMX, and SC indeed play a significant intermediary role in the relationship between EI and SB. Furthermore, the total effect value of EI → SB is 0.503, the bias-corrected 95% confidence interval do not contain 0, and the P value is less than 0.05. Thus, the total effect is significant. As explained above, JS, OCB, LMX, and SC do play significant mediating roles in the relationship between EI and SB, and their mediating effects are all completely mediating.

Table 5-24 displays the total, direct, and indirect effects of each variable on the dependent variables. Results show that EI had direct effects on SC, while EI had an indirect effect on SC. The total effect of EI on SC, which was the sum of direct and indirect effects through LMX, was found to be 0.706. By contrast, the total effect of EI on OCB was found to be 1.000. Hence, EI was the important factor influencing employees' safety behaviour. Notably, LMX also had a total effect with a value of 0.352 on safety behaviour. In addition, OCB had a total effect on safety behaviour; the value of this effect was 0.629.

As shown in Table 5-23, the relationships between LMX and OCB, and safety climate and safety behaviour are not supported. Nevertheless, this research further to analyse the relationships between LMX and OCB, and safety climate and safety behaviour if other variables were not considered. Figure 5-6 and Figure 5-7 show that LMX positively affected OCB and safety climate had a significant and positive relationship on safety behaviour. This reflects that safety climate also is one of important factors affect employees' safety behaviours.
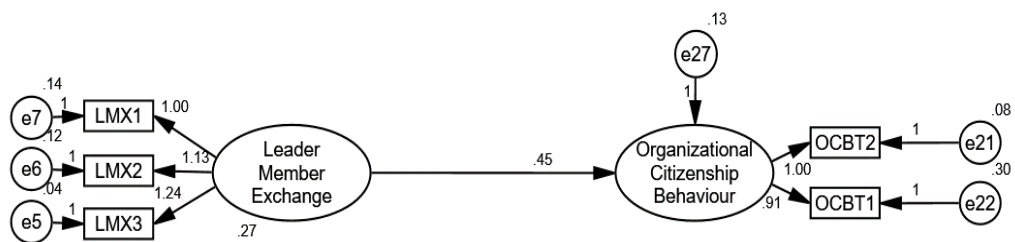
Chi-Square = 31.563
Degree of freedom = 4
Probability level = .000
GFI = .964
AGFI = .865
RMR = .016

Figure 5-6 The Impact of LMX on OCB
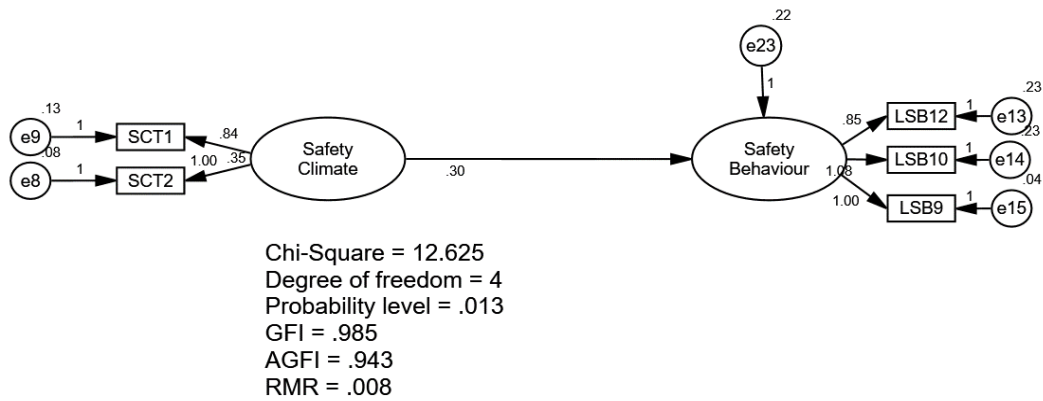
Figure 5-7 The Impact of Safety Climate on Safety Behaviour

5.5 Summary

This chapter has presented empirical results and analysis through employing exploratory factor analysis and structural equation modelling. LMX, SC, OCB, JS, EI, and SB dimensions were identified by an exploratory factor analysis. A one-way analysis of variance (ANOVA) was performed to evaluate the differences between the LMX, SC, OCB, JS, and EI dimensions according to the respondents' characteristics. Structural equation modelling was employed to test the research hypotheses. Results, as elaborated in Sections 5.4 and 5.5, indicated that safety climate positively affected OCB (H_2). LMX was positively associated with safety climate (H_3) and safety behaviour (H_4). EI was positively associated with LMX (H_6), OCB (H_7), job stress (H_8), and safety climate (H_9). In addition, OCB was positively associated with safety behaviour (H_{10}). However, the relationships between safety climate and safety behaviour (H_1), LMX and OCB (H_5) were not supported in this study.

This chapter has presented the empirical results through statistical analysis. The final chapter will present the conclusions and contributions of this study. It will also discuss both its research limitations and its implications for container terminal practitioners and will identify potential avenues for future research.

CHAPTER 6: DISCUSSION AND CONCLUSIONS

In the final chapter of this thesis, four sections will be explored. The first section summarises the major theoretical and empirical findings on LMX and employees' safety behaviours in container terminal operations. The second section describes the contributions of this research from a practical and a theoretical perspective. The third section demonstrates the implications of this study for practice and theory. The fourth section addresses limitations of the current research, and the final section suggests avenues for research on LMX and the determinants of safety behaviours.

6.1 Conclusion to the Study

This research aims to examine the determinants of employee's safety behaviours in the container terminal context. Specifically, this research focuses on the roles of the leader–member exchange and safety climate, and its influence on the relationships among emotional intelligence, employees' organisational citizenship behaviour, job stress, and safety behaviour. A conceptual model was developed to examine the linkages between these variables. The main findings derived from a survey conducted in Taiwan among container terminal operators are summarised below.

6.1.1 The Relative Agreement of Leader-Member Exchange, Safety Climate, Organizational Citizenship Behaviour, Job Stress, and Emotional Intelligence Attributes

The first objective of this research was to understand employees' perceptions

of LMX, safety climate, OCB, job stress, and EI in container terminal operations. A descriptive analysis of the survey results presented in Chapter Four indicated that the three most agreement of LMX attributes to container terminal operators were: *regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.,* and *I have a good working relationship with my supervisor.* On the other hand, the five most agreement of safety climate attributes to container terminal firms were: *my company has set up a work safety rule*, *my company announces safety policies, my company has established a safety responsibility system*, *my supervisor says a 'good word' to workers who pay special attention to safety* and *my supervisor uses explanations to get us to act safely.* The three most agreement of organisational citizenship behaviour attributes to container terminal operators were: *I will give early notice when I unable to work*, *I adhere to formal rules in order to maintain an order in the company*, *I protect my company's equipment and property*, *I actively forward work safety-related information to co-workers*, *I actively help new employees*, and *I help co-workers who have heavy workloads.* For the job stress, the three most agreement of attributes to container terminal operators were: *my job requires a high level of responsibility*, *my job requires a high level of accountability,* and *my job must balance several factors at once*.

Regarding emotional intelligence, respondents expressed the three most agreement of attributes of container terminal operators were: *I have a good understanding of my own emotions, I have a good sense of why I have certain feelings most of the time*, and *I really understand what I feel*. In addition, the three most agreement of employees' safety behaviour attributes of container terminal

operators were: *my subordinate has safety awareness at work, my subordinate complies with safety rules and standard operational procedures,* and *my subordinate does not neglect safety, even when in a rush*. These results were consistent with previous studies (Adebayo and Ogunsina, 2011; Davies *et al.*, 1998; Dansereau *et al.*, 1973; Graen *et al.*, 1980; Graen *et al.*, 1973; Neal *et al.*, 2000; Organ, 1998; Podsakoff *et al.*, 2000; Reichers and Schneider, 1990; Zohar, 1980a).

6.1.2 Respondents' Perceptions of the Differences of Leader-Member Exchange, Safety Climate, Organizational Citizenship Behaviour, Job Stress, and Emotional Intelligence According to Respondents' Characteristics

This research examined the respondents' perceptions of LMX, safety climate, OCB, job stress, emotional intelligence, and safety behaviour according to respondents' characteristics. Overall, respondents those who have high working experience, tenure, age, and educational levels had high levels of agreement of LMX. A comparison of the levels of agreement showed that respondents in companies with more than 200 employees had higher agreement of safety climate than those working in small firms. These results are not surprising, since large container terminal operators have sufficient resources to enhance organisational safety climate. These results were consistent with the findings of Lu and Yang (2011).

In addition, this research found that respondents those who have high working experience, tenure, age, and educational levels had high levels of OCB. In general, this research showed that higher of respondents' working experience, tenure, age, and educational levels was correlated with higher levels of job stress. The results also indicate that respondents who were working in larger size firms had higher job stress than those who worked for small size of container terminal

operators.

6.1.3 *Identification of Leader-Member Exchange, Safety Climate, Organizational Citizenship Behaviour, Job Stress, and Emotional Intelligence Dimensions*

A factor analysis was employed to identify the dimensions from the attributes of LMX, safety climate, OCB, job stress, and emotional intelligence. The results indicate that LMX and safety behaviour were identified as one single factor. Two safety climate dimensions were identified, namely: safety management and safety policy (Dedobbeleer and Béland, 1991; Lu and Tsai, 2008; Zohar, 1980a; Zohar and Luria, 2005). Furthermore, OCB was identified based on two dimensions: employees' helping behaviour and compliance behaviour (Organ, 1997; Smith *et al.*, 1983). Regarding the measures of emotional intelligence, which was categorised into regulation of emotion and self-emotion appraisal dimensions (Davies *et al.*, 1998; Groves *et al.*, 2008; Jung and Yoon, 2012; Siu, 2009), whereas job stress measures were constructed by challenge stressor and job requirement dimensions (LePine *et al.*, 2016; Lu and Kuo, 2016). Finally, the measures of safety behaviour were constructed by one factor, which is consistent with previous studies (DeJoy, 1994; Hofmann *et al.*, 2003; Neal, 2000; Neal and Griffin, 1997).

6.1.4 Impacts of Safety Climate on Safety Behaviour and OCB

The results of testing the hypotheses were presented in Chapter Five. The findings indicated that safety climate was not found to have a positive impact on safety behaviours in the conceptual model. Thus, Hypothesis 1 was not supported in this empirical study. However, this does not mean that safety climate was unimportant in explaining employees' safety behaviours. This study found that safety climate positively affected OCB in container terminal operations. Thus, Hypothesis 2 was supported. Specifically, this study provided evidence that safety

climate had indirect effects upon employees' safety behaviours through OCB. This finding implies that container terminal operators with a high degree of safety climate will manifest better employees' OCB. This study indicates that safety management and policy had a direct impact upon employees' OCB and an indirect impact on behaviours in the workforce in a variety of ways.

6.1.5 Impacts of LMX on Safety Climate, and Safety Behaviour

The findings indicated that LMX had a positive relationship with safety climate and safety behaviour (Dienesch and Liden, 1986; Liden *et al.*, 1997; Paul and Maiti, 2007). Hence, Hypothesis 3 and Hypothesis 4 were supported in this study. However, the proposition of the effect of LMX on OCB was not significant. Thus, Hypothesis 5 was not supported. This finding implies that container terminal operators with good relationships of LMX will have better safety behaviour and safety climate. The results of this study emphasise the importance of LMX and illustrate the potential role of LMX quality in enhancing employees' safety behaviours. Specifically, organisations could enhance workplace safety by fostering a positive relationship between employees and their supervisors.

6.1.6 Impacts of Emotional Intelligence on LMX, OCB, Job Stress, and Safety Climate

The findings also indicated a positive relationship between employee emotional intelligence and LMX, OCB, job stress, and safety climate. Thus, Hypothesis 6, Hypothesis 7, Hypothesis 8, and Hypothesis 9 were supported in this study. This finding implies that container terminal employees with high-level emotional intelligence will have better LMX and OCB of employees and will endeavour to increase their organisational safety climate. Despite several previous studies (e.g. Lu and Kuo, 2016) stating that emotional intelligence has a negative

effect on job stress, Matthew (2009) and LePine *et al.* (2016) argued that high workload, time pressure, and high levels of responsibility could increase employees' job stress. The measures of emotional intelligence include *I am sensitive to the feelings and emotions of others*, *I always set goals for myself and then try my best to achieve them, I always encourage myself to try my best,* and *I can control my temper so that I can handle difficulties rationally.* Sensitivity, set goals, achieved goals, control temper, and handle difficulties are related to workload and duty requirements. Therefore, the result that emotional intelligence had a positive influence on job stress was not surprising. The findings showed that emotional intelligence positively influences safety climate. This implies that emotionally intelligent employees can elaborate upon human behaviours and characteristics in formulating the organisational safety climate by thinking others' roles and working conditions. The results were consistent with those of previous studies (Matthews *et al.*, 2012; Nafukho, 2009; Petrides and Furnham, 2003).

6.1.7 Impact of OCB on Safety Behaviour

The results illustrated that OCB had a positive effect on safety behaviour, which was consistent with the findings of previous studies (Koradecka, 2001; Konovsky and Pugh, 1994; Didla *et al.*, 2009). Thus, Hypothesis 10 was supported. This finding implies that employees with a high degree of OCB will contribute to better safety behaviour in terms of safety awareness, compliance, and safety participation. In order to improve safety behaviour, this research suggests that container terminal managers should emphasise a high degree of OCB such as helping behaviour and compliance behaviour.

6.1.8 Impacts of Job Stress on Safety Behaviour

This study supported Hypothesis 11, which proposed that job stress has a

negative effect on employees' safety behaviours. This finding implies that employees with a high degree of job stress will reduce safety behaviour and increase risk at the workplace (Lu and Kuo, 2016; Wang *et al.*, 2017). Therefore, to increase employees' safety behaviours and to reduce potential terminal accidents, job stress should be a concern and should be controlled. This study suggests that managers could reinforce safety behaviour by effectively controlling employees' stress levels through job training and provision of appropriate safety equipment. This finding was consistent with that of Lu and Kuo (2016).

6.2 Contributions of the Study

This study has made important contributions to maritime safety in four ways. First, according to the author's knowledge, this study is the first attempt to test the quality of LMX, OCB, work pressure, and emotional intelligence in the container terminal environment. The study found that LMX has different effects on employees' safety behaviours and safety climate. This study found that safety climate has an indirect impact on employee safety behaviour through OCB. Specifically, this study points out the influence of EI on LMX, OCB, and safety climate, as well as its indirect influence on employees' safety behaviours. Second, although some previous studies have taken safety climate into consideration (Griffin and Neal, 2000; Lu and Tsai, 2010; Zohar, 1980a) when examining issues related to safety behaviours, the application of LMX seems to be lacking in the maritime safety literature so far. Therefore, this study provides a comprehensive method for security researchers to apply LMX in their own research. Third, this study provides a large number of research results on LMX adoption in container terminals for maritime safety literature. Finally, rigorous statistical techniques, such as exploratory factor analysis, confirmatory factor analysis, and structural

equation modelling, were used in this study to test the research hypotheses, so as to enhance the reliability of interpretation and the meaning of the research results.

6.3 Implications of the Study

This study has a certain guiding significance for security research and LMX theory and practice. First, this study emphasizes the importance of LMX, safety climate, emotional intelligence and work stress to employees' OCB and safety behaviors. Although previous studies on safety climate (Lu and Tsai, 2010; Lu and Yang, 2011; Zohar (1980) notes that organizational values or safety norms may affect employees' OCB. So far, relatively little research has been conducted on the impact of LMX on OCB. The results of this study add new content to the emerging safety research, showing that the front-line supervisors and the professional climate they create in the work team can have a positive impact on the organizational behavior and safety behavior of their subordinates in container terminal operations. The results can be used as reference for the safety policy, staff safety training and safety education in container terminals.

Second, the results prove the value of LMX, which has been found to be positively correlated with the safety climate. This study suggests that container terminal operators should focus on the development of a safe environment, emphasize good organizational structure of employees, and focus on compliance with legal and professional standards, as well as the public interest rather than the personal interest. To increase safety behavior, an organization should develop a closer LMX relationship to encourage a safety *climate* and system that rewards OCB for teamwork and safety behavior. Specifically, container terminal operators could enhance a positive LMX relationship for fostering their organizational safety

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climates.

Third, this study found that the safety climate has an important impact on employees' OCB, which terminal operators must consider. Compared with previous studies (Lu and Tsai, 2010; Lu and Yang, 2011; Zohar, 1980a) agree that safety climate is positively correlated with organizational citizenship behavior of employees. As a safe working environment helps increase the number of employees, container terminal operators should try their best to select and/or train safety plans for their employees and supervisors. Training programs should include communication about the importance of safety, which can be achieved by rewarding and supporting employees who behave safely and as role models for organizational citizenship. Container terminal operators should develop safety response systems to foster a safe environment.

This study finds that the safety climate and organizational citizenship behavior mediate the relationship between LMX and employee safety behaviors. Container terminal operators can enhance LMX qualification by employees' participation, employees' helping behaviour, and employees comply with company's safety rules and regulations. Employees may participate in OCB when they are working in a safe environment.

Another important finding of this study is that emotional intelligence positively affects LMX, OCB, and safety climate. *Emotional intelligence* refers to the ability to understand and observe others in social contexts, to detect the changes in emotional reactions, and to apply such knowledge to affect others through emotional control and regulation. As such, it represents a critically important capability for effective management and team performance in an

organisation. Emotionally intelligent employees can generate social knowledge and capabilities in order to manage and control the behaviours and emotions of others in order to accomplish organisational goals. This study suggests that container terminal operators can evaluate how employees might be trained to increase their emotional intelligence. Workshops and seminars, particularly those with various elements of emotional intelligence as topics, might provide a means of fostering employees' overall emotional intelligence.

Finally, this study found that job stress negatively influenced employees' safety behaviours. Thus, this study suggests that managers could reinforce safety behaviour by effectively reducing employees' job stress through job training and provision of safety equipment.

6.4 Limitations and Future Research

This study established a conceptual model to examine the impact of LMX, safety climate, OCB, emotional intelligence and work stress on the safety behavior of container terminal employees. However, it has several limitations. First, data collected on LMX relationships, employee emotional intelligence, and work stress at container terminals may be biased due to respondents' reluctance to report unsafe behavior. Secondly, this research is limited to LMX dimension research of Li and Liao (2014) and Vidyarthi et al. (2014).Future studies can examine the links among LMX, moral climate, safety performance and member exchange relations (Hofmann et al., 2003; Liden et al., 1997), and supervisor leadership (Wimbush and Shepard, 1994).Third, this study is especially aimed at employees of container terminal operators in Taiwan. It is valuable to collect more respondents from other countries to improve the generality of the conceptual model. Fourthly, although

questionnaire survey has been proved to be a good attitude research method, the surveyors did not directly contact some respondents to clarify the problem. It is impossible to verify whether the respondents' answers are true. Finally, future researchers could also consider using longitudinal analysis to examine the impact of safety climate and LMX on OCB in other sectors, such as transportation, manufacturing, and healthcare.

APPENDIX A: SUPERVISOR'S QUESTIONNAIRE (ENGLISH VERSION)

Dear Sir/Madam,

I am currently a research student at the Hong Kong Polytechnic University in Hong Kong. I am sincere to invite you to participate in maritime research with respect to the determinants of employees' safety behaviours in container terminal operators. The primary purpose of this study is to understand the employees' perceptions of the quality of leader-member relationship, safety climate, organizational citizenship behaviour, job stress, and emotional intelligence on employees' safety behaviour. There are no right or wrong answers. If you are not sure of the answer to a question, please provide your best estimate as your views matter.

Your opinions are extremely important to me. The information gathered in this survey will be treated in the strictest confidential. No individual person can be identified from the survey form. This survey will take about 20 minutes.

Please return this questionnaire in the Freepost envelope provided.

Thank you for your support and assistance
Yours sincerely

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I. Respondents' Characteristic

1. What is your job title?
   ☐General Manager ☐Associate Manager ☐Manager/Assistant Manager ☐Section Manager/Deputy Section Manager
   ☐Others (Please explain) _____

2. How many years have your industry experience in the container terminal operators?
   ☐Less than 5 years ☐6 to10 years ☐11 to15 years ☐16 to20 years ☐Over20years

3. How many years have your worked for this company?
   ☐Less than 5 years ☐6 to10 years ☐11 to15 years ☐16 to20 years ☐Over20years

4. What is your age?
   ☐Under 30 years old ☐31 to 40 years ☐41 to 50 years ☐51 to 60 years ☐Over 61 years

5. What is your educational level? ☐Under high school ☐College/University ☐Over Master

6. What type of business is your company in container terminal?
   ☐Stevedore company ☐Container freight station ☐Dedicated terminal operator ☐Container maintenance and repaired company
   ☐Others (Please explain) _____

7. What was the approximate number of employees for you company?
   ☐Less than 20 ☐21 to 50 ☐51 to 100 ☐101 to 200 ☐Over 200

8. Which department you are working for?
   ☐Administration Department (General manager office, audit room, secretary room, personnel department, accounting, information, legal, environmental protection)
   ☐Ministry of commerce (customer service, market analysis, import, export)
   ☐Engineering department (purchasing department, storage department, machine and tool operation)
   ☐Others (Please explain) _____

II. LMX and Subordinate A's Safety Behaviour (Supervisor's View)

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
	1	2	3	4	5
1. I am satisfied with the work performance of my subordinate A.	☐	☐	☐	☐	☐
2. I understand the work problems and needs of my subordinate A.	☐	☐	☐	☐	☐
3. I appreciate the potential of my subordinate A.	☐	☐	☐	☐	☐
4. Regardless of how much formal authority my subordinator A has built into his or her position, my subordinator A would use his or her ability to help me in my work.	☐	☐	☐	☐	☐
5. Again, regardless of the amount of formal authority my subordinator A has, he or she would "bail me out" at his or her expense.	☐	☐	☐	☐	☐
6. My subordinator A would defend and justify my decision if I was not present to do so.	☐	☐	☐	☐	☐
7. I have a good working relationship with my subordinator A.	☐	☐	☐	☐	☐
8. Subordinator A keeps safety awareness at work	☐	☐	☐	☐	☐
9. Subordinator A complies with safety rules and standard operational procedures.	☐	☐	☐	☐	☐
10. Subordinator A does not neglect safety, even when in a rush.	☐	☐	☐	☐	☐
11. Subordinator A wears personal protective equipment at work.	☐	☐	☐	☐	☐
12. Subordinator A participates in setting safety goal.	☐	☐	☐	☐	☐
13. Subordinator A actively provides safety improvement suggestions.	☐	☐	☐	☐	☐
14. Subordinator A actively participates in safety meetings.	☐	☐	☐	☐	☐

III. LMX and Subordinate B's Safety Behaviour (Supervisor's View)

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
1. I am satisfied with the work performance of my subordinate B.	☐	☐	☐	☐	☐
2. I understand the work problems and needs of my subordinate B.	☐	☐	☐	☐	☐
3. I appreciate the potential of my subordinate B.	☐	☐	☐	☐	☐
4. Regardless of how much formal authority my subordinator B has built into his or her position, my subordinator B would use his or her ability to help me in my work.	☐	☐	☐	☐	☐
5. Again, regardless of the amount of formal authority my subordinator B has, he or she would "bail me out" at his or her expense.	☐	☐	☐	☐	☐
6. My subordinator B would defend and justify my decision if I was not present to do so.	☐	☐	☐	☐	☐
7. I have a good working relationship with my subordinator B.	☐	☐	☐	☐	☐
8. Subordinator B keeps safety awareness at work	☐	☐	☐	☐	☐
9. Subordinator B complies with safety rules and standard operational procedures.	☐	☐	☐	☐	☐
10. Subordinator B does not neglect safety, even when in a rush.	☐	☐	☐	☐	☐
11. Subordinator B wears personal protective equipment at work.	☐	☐	☐	☐	☐
12. Subordinator B participates in setting safety goal.	☐	☐	☐	☐	☐

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
13. Subordinator B actively provides safety improvement suggestions.	☐	☐	☐	☐	☐
14. Subordinator B actively participates in safety meetings.	☐	☐	☐	☐	☐

IV. LMX and Subordinate C's Safety Behaviour (Supervisor's View)

	Strongly disagree	Disagree	Neither	Agree	Strongly agree
	1	2	3	4	5
1. I am satisfied with the work performance of my subordinate C.	☐	☐	☐	☐	☐
2. I understand the work problems and needs of my subordinate C.	☐	☐	☐	☐	☐
3. I appreciate the potential of my subordinate C.	☐	☐	☐	☐	☐
4. Regardless of how much formal authority my subordinator C has built into his or her position, my subordinator C would use his or her ability to help me in my work.	☐	☐	☐	☐	☐
5. Again, regardless of the amount of formal authority my subordinator C has, he or she would "bail me out" at his or her expense.	☐	☐	☐	☐	☐
6. My subordinator C would defend and justify my decision if I was not present to do so.	☐	☐	☐	☐	☐
7. I have a good working relationship with my subordinator C.	☐	☐	☐	☐	☐
8. Subordinator C keeps safety awareness at work	☐	☐	☐	☐	☐
9. Subordinator C complies with safety rules and standard operational procedures.	☐	☐	☐	☐	☐
10. Subordinator C does not neglect safety, even when in a rush.	☐	☐	☐	☐	☐
11. Subordinator C wears personal protective equipment at work.	☐	☐	☐	☐	☐
12. Subordinator C participates in setting safety goal.	☐	☐	☐	☐	☐
13. Subordinator C actively provides safety improvement suggestions.	☐	☐	☐	☐	☐
14. Subordinator C actively participates in safety meetings.	☐	☐	☐	☐	☐

APPENDIX B: EMPLOYEE'S QUESTIONNARIE (ENGLISH VERSION)

Dear Sir/Madam,

  I am currently a research student at the Hong Kong Polytechnic University in Hong Kong. I am sincere to invite you to participate in maritime research with respect to the determinants of employees' safety behaviours in container terminal operators. The primary purpose of this study is to understand the employees' perceptions of the quality of leader-member relationship, safety climate, organizational citizenship behaviour, job stress, and emotional intelligence on employees' safety behaviour. There are no right or wrong answers. If you are not sure of the answer to a question, please provide your best estimate as your views matter.

  Your opinions are extremely important to me. The information gathered in this survey will be treated in the strictest confidential. No individual person can be identified from the survey form. This survey will take about 20 minutes.

  Please return this questionnaire in the Freepost envelope provided.

Thank you for your support and assistance
Yours sincerely

Hsiang-Kai, Weng
PhD Candidate
Department logistic and Maritime Studies
The Hong Kong Polytechnic University
Advisor: Chin-Shan Lu (Prof.)
Co-Advisor: Kee-hung, LAI (Prof.)
Email: h.k.weng@
Tel：+886-928-   ；+852-6292

I. Respondents' Characteristic

1. What is your job title?

 ☐General Manager ☐Associate Manager ☐Manager/Assistant Manager ☐Section Manager/Deputy Section Manager

 ☐Specialist ☐Others (Please explain) _____

2. How many years have your industry experience in the container terminal operators?

 ☐Less than 5 years ☐6 to10 years ☐11 to15 years ☐16 to20 years ☐Over20years

3. How many years have your worked for this company

 ☐Less than 5 years ☐6 to10 years ☐11 to15 years ☐16 to20 years ☐Over20years

4. What is your age?

 ☐Under 30 years old ☐31 to 40 years ☐41 to 50 years ☐51 to 60 years ☐Over 61 years

5. What is your educational level?

 ☐Under high school ☐College/University ☐Over Master

6. What type of business is your company in container terminal?

 ☐Stevedoring company ☐Container freight station ☐Dedicated terminal operator ☐Container maintenance and repaire company

 ☐Others (Please explain) _____

7. What was the approximate number of employees for you company?

 ☐Less than 20 ☐21 to 50 ☐51 to 100 ☐101 to 200 ☐Over 200

8. Which department you are working for?

 ☐Administration Department (General manager office, audit room, secretary room, personnel department, accounting, information, legal, environmental protection)

 ☐Ministry of commerce (customer service, market analysis, import, export)

 ☐Engineering department (purchasing department, storage department, machine and tool operation)

 ☐Others (Please explain) _____

II. Leader-Member Exchange Attributes

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
		1	2	3	4	5
1.	My supervisor is satisfied with my working performance.	☐	☐	☐	☐	☐
2.	My supervisor understands my job problems and needs.	☐	☐	☐	☐	☐
3.	My supervisor recognizes my potential.	☐	☐	☐	☐	☐
4.	Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.	☐	☐	☐	☐	☐
5.	Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense.	☐	☐	☐	☐	☐
6.	My supervisor would defend and justify my decision if I was not present to do so.	☐	☐	☐	☐	☐
7.	I have a good working relationship with my supervisor.	☐	☐	☐	☐	☐

III. Safety Climate Attributes

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
1.	My company announces safety policies	☐	☐	☐	☐	☐
2.	My company establishes a safety responsibility system	☐	☐	☐	☐	☐
3.	My company sets up a work safety rule.	☐	☐	☐	☐	☐
4.	My company motivates workers' safety behaviours	☐	☐	☐	☐	☐
8.	My company encourages workers' participation in safety decision-making.	☐	☐	☐	☐	☐
5.	My company encourages workers to provide safety suggestion.	☐	☐	☐	☐	☐
6.	My company provides sufficient safety education.	☐	☐	☐	☐	☐
7.	The design of safety training programs is good in my company.	☐	☐	☐	☐	☐
8.	Safety training programs have been adopted in my workplace.	☐	☐	☐	☐	☐
9.	The safety training programs are helpful to prevent accidents.	☐	☐	☐	☐	☐
10.	My supervisor makes sure employees receive all the safety equipment needed to do the job safely.	☐	☐	☐	☐	☐
11.	My supervisor frequently inspects employees to obey the safety rules.	☐	☐	☐	☐	☐
12.	My supervisor uses explanations (not just compliance) to get us to act safely.	☐	☐	☐	☐	☐
13.	My supervisor refuses to ignore safety rules when work falls behind schedule.	☐	☐	☐	☐	☐
14.	My supervisor requires working safely when employees are tired or stressed.	☐	☐	☐	☐	☐
15.	My supervisor insists that employees obey safety rules when fixing equipment or machines.	☐	☐	☐	☐	☐
16.	My supervisor says a "good word" to workers who pay special attention to safety.	☐	☐	☐	☐	☐
17.	My supervisor spends time to help employees' learning in identifying problems before they arise.	☐	☐	☐	☐	☐

II. Leader-Member Exchange Attributes

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
18.	My supervisor insists employees wear our protective equipment even if it is uncomfortable.	☐	☐	☐	☐	☐

IV. Employees' Safety Behaviour (Self Appraisal)

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
		1	2	3	4	5
1.	I keep safety awareness at work	☐	☐	☐	☐	☐
2.	I comply with safety rules and standard operational procedures.	☐	☐	☐	☐	☐
3.	I do not neglect safety, even when in a rush	☐	☐	☐	☐	☐
4.	I wear personal protective equipment at work	☐	☐	☐	☐	☐
5.	I participate in setting safety goal	☐	☐	☐	☐	☐
6.	I actively provide safety improvement suggestions	☐	☐	☐	☐	☐
7.	I actively participate in safety meetings	☐	☐	☐	☐	☐

V. Organizational Citizenship Behaviour Attributes

1.	I help co-worker who has been absent	☐	☐	☐	☐	☐
2.	I help co-worker who has heavy workloads.	☐	☐	☐	☐	☐
3.	I actively help supervisor even he or her was not asked.	☐	☐	☐	☐	☐
4.	I take time to listen co-workers' problems and worries	☐	☐	☐	☐	☐
5.	I actively help new employees.	☐	☐	☐	☐	☐
6.	I actively forward work safety-related information to co-workers	☐	☐	☐	☐	☐
7.	I will give early notice when I unable to work.	☐	☐	☐	☐	☐
8.	I do not take undeserved work break at work	☐	☐	☐	☐	☐
9.	I do not waste office hours on personal phone conversations	☐	☐	☐	☐	☐
10.	I do not complain things that are not relevant to work	☐	☐	☐	☐	☐
11.	I protect company's equipment and property	☐	☐	☐	☐	☐
12.	I adhere to formal rules in order to maintain an order in the company	☐	☐	☐	☐	☐

VI. Job Stress Attributes

1.	My job must complete a lot of work	☐	☐	☐	☐	☐
2.	My job must work very hard	☐	☐	☐	☐	☐
3.	My job has time pressure	☐	☐	☐	☐	☐
4.	I have to work at a rapid pace to complete all my tasks	☐	☐	☐	☐	☐
5.	My job must be performing complex tasks	☐	☐	☐	☐	☐
6.	My job must use a broad set of skills and abilities	☐	☐	☐	☐	☐
7.	My job must balance several factors at once	☐	☐	☐	☐	☐

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
8.	My job must multitask different assigned jobs at the same time	□	□	□	□	□
9.	My job requires a high level of responsibility	□	□	□	□	□
10.	My job requires a high level of accountability	□	□	□	□	□

VII. Emotional Intelligence Attributes

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
		1	2	3	4	5
1.	I have a good sense of why I have certain feelings most of the time.	□	□	□	□	□
2.	I have good understanding of my own emotions.	□	□	□	□	□
3.	I really understand what I feel.	□	□	□	□	□
4.	I always know whether or not I am happy.	□	□	□	□	□
5.	I always know my friends' emotions from their behaviour.	□	□	□	□	□
6.	I am a good observer of others' emotions	□	□	□	□	□
7.	I am sensitive to the feelings and emotions of others	□	□	□	□	□
8.	I have good understanding of the emotions of people around me.	□	□	□	□	□
9.	I always set goals for myself and then try my best to achieve them.	□	□	□	□	□
10.	I always tell myself I am a competent person.	□	□	□	□	□
11.	I am a self-motivating person.	□	□	□	□	□
12.	I would always encourage myself to try my best.	□	□	□	□	□
13.	I can control my temper so that I can handle difficulties rationally.	□	□	□	□	□
14.	I am quite capable of controlling my own emotions.	□	□	□	□	□
15.	I can always calm down quickly when I am very angry.	□	□	□	□	□
16.	I have good control of my own emotions.	□	□	□	□	□

※**If you have any comments, please email to h.k.weng@**　　　　※

This is the end of this questionnaire. Thank you again for your help.

APPENDIX C: SUPERVISOR'S QUESTIONNARIE (CHINESE VERSION)

各位航運界的先進　您好：

素仰鈞座事業成就卓越，熱心支持學術研究，學生目前正在進行「台灣貨櫃經營業之員工安全行為決定要素:領導與部屬交換關係與安全氣候的作用」。由衷希望　您能對本問卷的中英對照的內容，依同意性程度提供寶貴的意見。本問卷所得資料僅供學術研究之用，絕不做個別披露及影響　貴公司的商業機密，敬請安心填答。

您的支持與協助是學生完成研究不可或缺的部分，懇請撥冗完成問卷填答。問卷完成後，請將問卷放入免付費信封寄回。如有叨擾之處，敬請包涵見諒！

感謝您的支持與協助。敬祝

鴻圖大展

吉祥如意

翁祥凱　敬上
香港理工大學物流及航運學系博士生
指導教授: 呂錦山、黎基雄
香港理工大學　物流及航運學系
連絡住址:
Email: h.k.weng@
連絡電話：+886-928-　　　　；+852-6292

第一部分：基本資料

一、 填答人資料

1. 請問　您目前的職稱?

   □總經理/副總經理　　　□協理　　　　□經理/副理　　　　□課長/副課長

   □其他(請說明)＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

2. 請問　您從事碼頭相關事業已有幾年?

   □5 年以內　　　　□6~10 年　　　□11~15 年　　　□16~20 年　　　□20 年以上

3. 請問　您在目前的公司服務已有幾年?

   □5 年以內　　　　□6~10 年　　　□11~15 年　　　□16~20 年　　　□20 年以上

4. 請問　您的年齡?

   □30 歲以內　　　□31~40 歲　　　□ 41~50 歲　　　□51~60 歲　　　□60 歲以上

5. 請問　您的最高學歷?　　　□高中以下　　　□大專/大學　　　□碩士(含以上)

6. 請問　您的公司屬於哪一類型的公司?

   □貨櫃碼頭裝卸公司　　　□貨櫃集散站　　　□貨櫃碼頭公司　　　□貨櫃空櫃堆放修理公司

   □其他(請說明)＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

7. 請問貴公司的員工數?

   □20 人以下　　　□21~50 人　　　□51~100 人　　　□101~200 人　　　□200 人以上

8. 請問　您在貴公司所服務的部門?

   □行政部 (總經理室、稽核室、秘書室、人事部、會計、資訊、法務、環保)

   □商務部 (客戶服務、市場分析、進口部、出口部)

   □工程部 (採購部、倉儲部、機具操作)

   □其他(請說明)＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

二、 領導與部屬關係及主管對部屬 A 安全行為的看法(主管部份)

	非常不同意	不同意	沒意見	同意	非常同意
	1	2	3	4	5
1. 我滿意直屬部屬 A 的工作表現。	☐	☐	☐	☐	☐
2. 我了解直屬部屬 A 的工作問題與需要。	☐	☐	☐	☐	☐
3. 我認同直屬部屬 A 的潛力。	☐	☐	☐	☐	☐
4. 即使不在工作職權範圍之內,直屬部屬 A 會儘力來協助我。	☐	☐	☐	☐	☐
5. 縱使不在工作職權範圍之內,直屬部屬 A 會用其個人的費用來協助我。	☐	☐	☐	☐	☐
6. 部屬 A 會為我所做的決策辯護,儘管我不在現場。	☐	☐	☐	☐	☐
7. 我與直屬部屬 A 工作關係良好。	☐	☐	☐	☐	☐
8. 部屬 A 在工作中會隨時保持安全警覺。	☐	☐	☐	☐	☐
9. 部屬 A 遵守安全作業規則和標準作業程序。	☐	☐	☐	☐	☐
10. 部屬 A 不會因為趕工或繁忙而忽視工作安全。	☐	☐	☐	☐	☐
11. 部屬 A 在工作時會依規定穿戴安全護具。	☐	☐	☐	☐	☐
12. 部屬 A 會積極參與安全目標的設定。	☐	☐	☐	☐	☐
13. 部屬 A 會主動提出工作上的安全改善方案。	☐	☐	☐	☐	☐
14. 部屬 A 會積極參與安全工作會議。	☐	☐	☐	☐	☐

三、 領導與部屬關係及主管對部屬 B 安全行為的看法(主管部份)

	非常不同意	不同意	沒意見	同意	非常同意
1. 我滿意直屬部屬 B 的工作表現。	☐	☐	☐	☐	☐
2. 我了解直屬部屬 B 的工作問題與需要。	☐	☐	☐	☐	☐
3. 我認同直屬部屬 B 的潛力。	☐	☐	☐	☐	☐
4. 即使不在工作職權範圍之內,直屬部屬 B 會儘力來協助我。	☐	☐	☐	☐	☐
5. 縱使不在工作職權範圍之內,直屬部屬 B 會用其個人的費用來協助我。	☐	☐	☐	☐	☐
6. 部屬 B 會為我所做的決策辯護,儘管我不在現場。	☐	☐	☐	☐	☐
7. 我與直屬部屬 A 工作關係良好。	☐	☐	☐	☐	☐
8. 部屬 B 在工作中會隨時保持安全警覺。	☐	☐	☐	☐	☐
9. 部屬 B 遵守安全作業規則和標準作業程序。	☐	☐	☐	☐	☐
10. 部屬 B 不會因為趕工或繁忙而忽視工作安全。	☐	☐	☐	☐	☐
11. 部屬 B 在工作時會依規定穿戴安全護具。	☐	☐	☐	☐	☐
12. 部屬 B 會積極參與安全目標的設定。	☐	☐	☐	☐	☐
13. 部屬 B 會主動提出工作上的安全改善方案。	☐	☐	☐	☐	☐
14. 部屬 B 會積極參與安全工作會議。	☐	☐	☐	☐	☐

四、 領導與部屬關係及主管對部屬 C 安全行為的看法(主管部份)	非常不同意	不同意	沒意見	同意	非常同意
	1	2	3	4	5
1. 我滿意直屬部屬 C 的工作表現。	□	□	□	□	□
2. 我了解直屬部屬 C 的工作問題與需要。	□	□	□	□	□
3. 我認同直屬部屬 C 的潛力。	□	□	□	□	□
4. 即使不在工作職權範圍之內，直屬部屬 C 會儘力來協助我。	□	□	□	□	□
5. 縱使不在工作職權範圍之內，直屬部屬 C 會用其個人的費用來協助我。	□	□	□	□	□
6. 部屬 C 會為我所做的決策辯護，儘管我不在現場。	□	□	□	□	□
7. 我與直屬部屬 C 工作關係良好。	□	□	□	□	□
8. 部屬 C 在工作中會隨時保持安全警覺。	□	□	□	□	□
9. 部屬 C 遵守安全作業規則和標準作業程序。	□	□	□	□	□
10. 部屬 C 不會因為趕工或繁忙而忽視工作安全。	□	□	□	□	□
11. 部屬 C 在工作時會依規定穿戴安全護具。	□	□	□	□	□
12. 部屬 C 會積極參與安全目標的設定。	□	□	□	□	□
13. 部屬 C 會主動提出工作上的安全改善方案。	□	□	□	□	□
14. 部屬 C 會積極參與安全工作會議。	□	□	□	□	□

APPENDIX D: EMPLOYEE'S QUESTIONNAIRE (CHINESE VERSION)

各位航運界的先進　您好：

　　素仰鈞座事業成就卓越，熱心支持學術研究，學生目前正在進行「台灣貨櫃經營業之員工安全行為決定要素:領導與部屬交換關係與安全氣候的作用」。由衷希望您能對本問卷的中英對照的內容，依同意性程度提供寶貴的意見。本問卷所得資料僅供學術研究之用，絕不做個別披露及影響 貴公司的商業機密，敬請安心填答。

　　您的支持與協助是學生完成研究不可或缺的部分，懇請撥冗完成問卷填答。問卷完成後，請將問卷放入免付費信封寄回。如有叨擾之處，敬請包涵見諒！

　　感謝您的支持與協助。敬祝

鴻圖大展

吉祥如意

翁祥凱　敬上
香港理工大學物流及航運學系博士生
指導教授: 呂錦山、黎基雄
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連絡住址:
Email: h.k.weng@
連絡電話：+886-928-　　　　；+852-6292

第一部分：基本資料

一、填答人資料

1. 請問　您目前的職稱?
   □總經理/副總經理　　　□協理　　　□經理/副理　　　□課長/副課長　　　□業務代表
   □專員　　　　　　　　□其他(請說明)_____

2. 請問　您從事碼頭相關事業已有幾年?
   □5 年以內　　　□6~10 年　　　□11~15 年　　　□16~20 年　　　□20 年以上

3. 請問　您在目前的公司服務已有幾年?
   □5 年以內　　　□6~10 年　　　□11~15 年　　　□16~20 年　　　□20 年以上

4. 請問　您的年齡?
   □30 歲以內　　　□31~40 歲　　　□41~50 歲　　　□51~60 歲　　　□60 歲以上

5. 請問　您的最高學歷?　　□高中以下　　　□大專/大學　　　□碩士(含以上)

6. 請問　您的公司屬於哪一類型的公司?
   □貨櫃碼頭裝卸公司　　　□貨櫃集散站　　　□貨櫃碼頭公司　　　□貨櫃空櫃堆放修理公司
   □其他(請說明)_____

7. 請問貴公司的員工數?
   □20 人以下　　　□21~50 人　　　□51~100 人　　　□101~200 人　　　□200 人以上

8. 請問　您在貴公司所服務的部門?
   □行政部 (總經理室、稽核室、秘書室、人事部、會計、資訊、法務、環保)
   □商務部 (客戶服務、市場分析、進口部、出口部)
   □工程部 (採購部、倉儲部、機具操作)
   □其他(請說明)_____

二、主管與部屬關係問項	非常不同意	不同意	沒意見	同意	非常同意
	1	2	3	4	5
1. 我的直屬主管滿意我的工作表現。	☐	☐	☐	☐	☐
2. 我的直屬主管了解我的工作問題及需要。	☐	☐	☐	☐	☐
3. 我的直屬主管了解我的工作能力(潛力)。	☐	☐	☐	☐	☐
4. 在主管正式職權範圍之外，我的直屬主管會儘力來協助我。	☐	☐	☐	☐	☐
5. 在主管正式職權範圍之外，我的直屬主管會花其個人的經費來幫助我。	☐	☐	☐	☐	☐
6. 我會替我的主管所做的決策辯護，儘管他或她不在場。	☐	☐	☐	☐	☐
7. 我跟直屬主管工作關係良好。	☐	☐	☐	☐	☐

三、安全氣候問項

	非常不同意	不同意	沒意見	同意	非常同意
1. 本公司有公布安全政策。	☐	☐	☐	☐	☐
2. 本公司有專責安全的制度。	☐	☐	☐	☐	☐
3. 本公司有制定安全工作守則。	☐	☐	☐	☐	☐
4. 本公司會激勵員工的安全行為。	☐	☐	☐	☐	☐
5. 本公司會鼓勵員工參與安全決策。	☐	☐	☐	☐	☐
6. 本公司鼓勵員工提供安全建議。	☐	☐	☐	☐	☐
7. 本公司提供足夠的安全教育。	☐	☐	☐	☐	☐
8. 本公司的安全課程很好。	☐	☐	☐	☐	☐
9. 本公司採用安全訓練課程。	☐	☐	☐	☐	☐
10. 本公司的安全培訓有助於防止事故發生。	☐	☐	☐	☐	☐
11. 我的主管會確保員工得到工作所需的安全裝備。	☐	☐	☐	☐	☐
12. 我的主管經常檢查員工是否遵守安全規則。	☐	☐	☐	☐	☐
13. 我的主管會要求員工依安全規則作業。	☐	☐	☐	☐	☐
14. 當工作進度落後時，我的主管仍不會忽略安全規則。	☐	☐	☐	☐	☐
15. 我的主管在員工感到疲勞或有壓力時，仍要求工作安全。	☐	☐	☐	☐	☐
16. 我的主管堅持在修理設備或機器時，仍遵守安全規則。	☐	☐	☐	☐	☐
17. 我的主管鼓勵關注安全的員工。	☐	☐	☐	☐	☐
18. 我的主管幫助員工找出問題，避免問題產生。	☐	☐	☐	☐	☐
19. 即使穿著裝備會令人不舒服，我的直屬主管堅持作業人員穿著防護裝備工作。	☐	☐	☐	☐	☐

四、安全行為問項	非常不同	不同意	沒意見	同意	非常同意
	1	2	3	4	5
1. 工作中我會隨時保持安全警覺。	☐	☐	☐	☐	☐
2. 我會主動遵守安全作業規則和標準作業程序。	☐	☐	☐	☐	☐
3. 我不會因為趕工或繁忙而疏忽工作安全。	☐	☐	☐	☐	☐
4. 我在工作時會依規定穿戴安全護具。	☐	☐	☐	☐	☐
5. 我會積極參與安全目標的設定。	☐	☐	☐	☐	☐
6. 我會主動提出工作上的安全改善方案。	☐	☐	☐	☐	☐
7. 我會積極地參與安全工作會議。	☐	☐	☐	☐	☐

五、組織公民行為問項

1. 我會主動幫助接替缺席同事的工作。	☐	☐	☐	☐	☐
2. 我會幫忙有大量工作負荷的同事。	☐	☐	☐	☐	☐
3. 不管主管有沒有要求，我會主動協助主管的工作。	☐	☐	☐	☐	☐
4. 我會花時間傾聽同事們的安全問題和擔憂。	☐	☐	☐	☐	☐
5. 我會主動幫助新進人員的工作。	☐	☐	☐	☐	☐
6. 我會主動傳遞與工作安全有相關的訊息給同事。	☐	☐	☐	☐	☐
7. 當我無法工作時，我會提前通知公司。	☐	☐	☐	☐	☐
8. 工作中我不會在沒有允許下任意休息。	☐	☐	☐	☐	☐
9. 我不會在上班時間中用私人電話。	☐	☐	☐	☐	☐
10. 我不會在工作中抱怨與工作無關緊要的事。	☐	☐	☐	☐	☐
11. 我愛惜公司的設備與財產。	☐	☐	☐	☐	☐
12. 我會遵守公司規定，以維持公司應有的秩序。	☐	☐	☐	☐	☐

六、工作壓力問項

1. 我的工作很辛苦。	☐	☐	☐	☐	☐
2. 我的工作有時間壓力。	☐	☐	☐	☐	☐
3. 我必須以快節奏的速度完成我所有的任務。	☐	☐	☐	☐	☐
4. 我的工作性質較複雜。	☐	☐	☐	☐	☐
5. 我的工作要求一定程度的技能。	☐	☐	☐	☐	☐
6. 我的工作必須考量多項因素。	☐	☐	☐	☐	☐
7. 我的工作很辛苦。	☐	☐	☐	☐	☐
8. 我的工作必須同時執行多項任務。	☐	☐	☐	☐	☐
9. 我的工作要求高度的責任感。	☐	☐	☐	☐	☐
10. 我的工作有高度的責任追究制度。	☐	☐	☐	☐	☐

七、情緒智力問項	非常不同意	不同意	沒意見	同意	非常同意
	1	2	3	4	5
1. 大部分的時間，我很清楚自己感覺。	☐	☐	☐	☐	☐
2. 我很了解自己的情緒。	☐	☐	☐	☐	☐
3. 我真的理解自己感覺。	☐	☐	☐	☐	☐
4. 我總是知道自己是否快樂。	☐	☐	☐	☐	☐
5. 我總是可以從朋友的行為中了解他們的情緒。	☐	☐	☐	☐	☐
6. 我善於觀察他人的情緒。	☐	☐	☐	☐	☐
7. 我對他人情緒及感覺非常敏感。	☐	☐	☐	☐	☐
8. 我通常了解周遭人的情緒狀況。	☐	☐	☐	☐	☐
9. 我會為自己設定目標，並盡最大努力去完成。	☐	☐	☐	☐	☐
10. 我總是告訴自己是一個有能力的人。	☐	☐	☐	☐	☐
11. 我是一個會自我激勵的人。	☐	☐	☐	☐	☐
12. 我常鼓勵自己要全力以赴。	☐	☐	☐	☐	☐
13. 我能控制自己的脾氣，如此我就能理智地處理困難的問題。	☐	☐	☐	☐	☐
14. 我有能力控制自己的情緒。	☐	☐	☐	☐	☐
15. 當我很生氣時，我能夠迅速冷靜下來。	☐	☐	☐	☐	☐
16. 我對自己的情緒能很好的控制。	☐	☐	☐	☐	☐

※若您有任何寶貴意見或批評指教，請 Email 至 h.k.weng@ ※

本問卷到此結束，再次感謝您的幫忙。

APPENDIX E: QUESTIONNARIE ITEMS

Construct	Code	Meaning
Leader-Member Exchange	LMX1	My supervisor is satisfied with my working performance
	LMX2	My supervisor understands my job problems and needs.
	LMX3	My supervisor recognizes my potential.
	LMX4	Regardless of how much formal authority my supervisor has built into his or her position, my supervisor would use his or her power to help me solve problems in my work.
	LMX5	Again, regardless of the amount of formal authority my supervisor has, he or she would "bail me out" at his or her expense
	LMX6	My supervisor would defend and justify my decision if I was not present to do so
	LMX7	I have a good working relationship with my supervisor.
Safety Climate	SC1	My company announces safety policies
	SC2	My company establishes a safety responsibility system
	SC3	My company sets up a work safety rule.
	SC4	My company motivates workers' safety behaviors
	SC5	My company encourages workers' participation in safety decision-making.
	SC6	My company encourages workers to provide safety suggestion.
	SC7	My company provides sufficient safety education
	SC8	The design of safety training programs is good in my company
	SC9	Safety training programs have been adopted in my workplace
	SC10	The safety training programs are helpful to prevent accidents.
	SC11	My supervisor makes sure employees receive all the safety equipment needed to do the job safely
	SC12	My supervisor frequently inspects employees to obey the safety rules.
	SC13	My supervisor uses explanations (not just compliance) to get us to act safely.

Construct	Code	Meaning
Safety Climate	SC14	My supervisor refuses to ignore safety rules when work falls behind schedule
	SC15	My supervisor requires working safely when employees are tired or stressed
	SC16	My supervisor insists that employees obey safety rules when fixing equipment or machines
	SC17	My supervisor says a "good word" to workers who pay special attention to safety.
	SC18	My supervisor spends time to help employees' learning in identifying problems before they arise
	SC19	My supervisor insists employees wear our protective equipment even if it is uncomfortable.
Organizational Citizenship Behaviour	OCB1	I help coworker who has been absent
	OCB2	I help co-worker who has heavy work-loads.
	OCB3	I actively help supervisor even he or her was not asked.
	OCB4	I take time to listen co-workers' problems and worries
	OCB5	I actively help new employees.
	OCB6	I actively forward work safety-related information to co-workers
	OCB7	I will give early notice when I unable to work.
	OCB8	I do not take undeserved work break at work
	OCB9	I do not waste office hours on personal phone conversations
	OCB10	I do not complain things that are not relevant to work
	OCB11	I protect company's equipment and property
	OCB12	I adhere to formal rules in order to maintain an order in the company.
Job Stress	JS1	My job must complete a lot of work
	JS2	My job must work very hard
	JS3	My job has time pressure
	JS4	I have to work at a rapid pace to complete all my tasks
	JS5	My job must be performing complex tasks

Construct	Code	Meaning
	JS6	My job must use a broad set of skills and abilities
	JS7	My job must balance several factors at once
	JS8	My job must multitask different assigned jobs at the same time
	JS9	My job requires a high level of responsibility
	JS10	My job requires a high level of accountability
Emotional Intelligence	EI1	I have a good sense of why I have certain feelings most of the time.
	EI2	I have good understanding of my own emotions.
	EI3	I really understand what I feel.
	EI4	I always know whether or not I am happy.
	EI5	I always know my friends' emotions from their behavior.
	EI6	I am a good observer of others' emotions
	EI7	I am sensitive to the feelings and emotions of others
	EI8	I have good understanding of the emotions of people around me.
	EI9	I always set goals for myself and then try my best to achieve them.
	EI10	I always tell myself I am a competent person.
	EI11	I am a self-motivating person.
	EI12	I would always encourage myself to try my best.
	EI13	I can control my temper so that I can handle difficulties rationally.
	EI14	I am quite capable of controlling my own emotions.
	EI15	I can always calm down quickly when I am very angry.
	EI16	I have good control of my own emotions.
	LSB8	My subordinate complies with safety rules and standard operational procedures.
	LSB9	My subordinate has safety awareness at work

Construct	Code	Meaning
	LSB10	My subordinate does not neglect safety, even when in a rush.
	LSB11	My subordinate actively provides safety improvement suggestions.
	LSB12	My subordinate wears personal protective equipment at work
	LSB13	My subordinate participates in setting safety goal.
	LSB14	My subordinate actively participates in safety meetings.

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