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How safety leadership, social capital, and safety awareness affect safety citizenship behavior: a mediation perspective

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ABSTRACT

Safety citizenship behavior (SCB) of the ship crew is essential to maritime safety. Therefore, using safety motivation as a mediating mechanism, this research attempts to understand and quantify the impact of safety leadership, social capital, and safety awareness on ship crew SCB. The study employs a causal design and survey methods in a quantitative manner. 120 crew members of passenger ships that were docked at Tanjung Priok Port in Jakarta made up the sample. A Likert scale questionnaire was utilized as the research tool for safety leadership, social capital, safety awareness, safety motivation, and SCB. Google Forms-formatted questionnaires were sent out by email and WhatsApp. Partial least squares (PLS)-based structural equation modeling (SEM) analysis was used to analyze the data. The study's findings indicate that safety leadership, social capital, safety awareness, and safety motivation all have a significant impact on SCB; additionally, safety leadership, social capital, and safety awareness all have a significant impact on safety motivation, which in turn has a significant impact on SCB through safety motivation. These results validate the novelty of the safety leadership, social capital, and safety awareness mediation model's effect on the SCB of passenger ship crew through safety motivation.



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Introduction

Safety issues are crucial for shipping activities because there are still frequent cases of ship accidents. As an illustration, the investigation report of the Indonesian Ministry of Transportation, Directorate of Sea Transportation (2021-2023) shows that there were 272 cases of ship accidents in Indonesia, such as sinking, burning, collisions, and grounding, which caused threats to human lives and loss of property. According to data on ship accidents released by the Indonesian Maritime Council, human error was to blame for 72% of them.

Even though ship accidents in Indonesia often occur, the handling of ship accident incidents is generally still administrative and documentary in nature, which does not resolve the root of shipping safety problems. This condition is a portrait of the weakness of the national shipping system, which is still far from adequate from a safety perspective. This illustrates how difficult it is to build an adequate safety system in the shipping

industry, so extra and special attention is needed, including neglecting research activities. The research results of Supardi et al. (2021) show that safety behavior reduces accident rates. One safety behavior is safety citizenship behavior (SCB), which reflects discretionary behavior that is not recognized by the company's formal reward system but can help the company perform better, which can be manifested in stewardship, voicing opinions, helping coworkers, reporting safety violations, initiating workplace change, and shared benevolence (Liu et al., 2020). The research results of Reader et al. (2016) and Chmiel et al. (2017) show that SCB can mitigate accidents and reduce the number of violations in organizations (companies). This means that ship accidents can occur due to the lack of SCB for the ship's crew. It does not happen without a reason but can be influenced by safety leadership, social capital, safety awareness, and safety motivation. Safety leadership is a way for leaders to influence, motivate, and enable other people to participate in the organization's success and effectiveness in the safety field. In reality, safety leadership is critical in shipping companies. If the company has adequate safety leadership, it can influence the ship crew's SCB. According to the research done by Subramaniam et al. (2023), safety leadership has an impact on nurses' participation and compliance in terms of safety behavior. The research results of Zhang et al. (2020) also show that social capital significantly affects SCB. Social capital includes relationships and social norms that allow people to safely plan their actions to achieve their goals. This is known as social capital. Social capital can be safety, trust, goals, and communication (Zhang et al., 2020). Then, research by Saetrevik and Hystad (2021) in Norway shows a significant relationship between safety awareness and SCB. The study of Uzuntarla et al. (2020) also proves that safety awareness positively correlates with safety behavior. Safety awareness is a condition of understanding rights and responsibilities about safety issues and possible dangers that may arise in the workplace. This awareness includes cognitive, behavioral, and evaluation aspects (Kiani & Khodabakhsh, 2014; Kallio et al., 2018). Another study shows that safety motivation influences SCB. Laurent et al. (2020) prove that safety motivation significantly affects workers' SCB. Then, the research results of Zhang et al. (2020) also show that safety motivation significantly influences workers' SCB. Safety motivation is a person's willingness to take safe and secure actions. Safety motivation includes action preferences, social loafing, and persistence. In contrast to this, several other empirical facts show inconsistent conditions. For example, research by Widyanty et al. (2021) in Indonesia proves that safety motivation does not affect workers' SCB. In addition, the study by Saifudin et al. (2020) also proves that safety awareness does not affect safety motivation. Hiep and Hien (2023) also prove that safety motivation does not affect workers' SCB. This condition indicates a research void that needs to be filled in order to provide scientific clarification. This research uses safety motivation to influence safety leadership, social capital, and safety awareness on SCB in light of this urgency.

Safety Leadership and SCB

SCB is very vital in the shipping safety system. Conceptually, organizational citizenship behavior (OCB) is the basis of the SCB conceptual building. According to Curcuruto & Griffin (2019), OCB represents the behaviors of employees who go above and beyond in the workplace to enhance the organization. These behaviors include defending the safety of others, attempting to avert mishaps, proactively enhancing the organization's safety system, and generally enhancing workplace safety (Conchie, 2013). Zhang et al. (2023) say that SCB is a free and pro-social action taken by employees to manage risks in industries that are very important for safety so that safety and organizational goals can be achieved. Examples of these behaviors include providing suggestions for improving safety practices, reporting safety incidents, and helping others solve safety problems. SCB has proven to be critical in improving the safety of work teams and increasing mutual support among workers, leading to increased organizational productivity. SCB is an important work group safety component (Curcuruto & Griffin, 2019). Unsafe actions contribute primarily to employee accidents in their activities, so improving safety behavior among groups is very important to reduce accidents (Guo et al., 2019). According to Wang et al. (2020), SCB is an individual safety behavior that goes beyond safety compliance and supports overall workplace safety conditions. According to Zhang et al. (2020), safety climate, leadership-member exchange relationships, and organizational support all have an impact on group-based behavior (SB). According to Schopf et al. (2021), behavior that promotes a work environment that supports safety is referred to as SCB. Therefore, SCB is an activity pertaining to safety and the advancement of safety programs concerning mishaps and hazardous conditions at work. These activities are demonstrated by metrics such as safety compliance, safety participation, worker assistance, the relationship between superiors and subordinates, civic virtue, and driving change (Wishart et al., 2019; Li et al., 2020; Laurent et al., 2020). Empirically, safety leadership can have an impact on SCB. Safety leadership has a beneficial impact on SCB, as demonstrated by the findings of earlier studies by Li et al. (2020), Lu and Yang (2010), Subramaniam et al. (2023), and Zhao et al. (2022). According to Fernández-Muñiz (2017), safety leadership is a concept that has the potential to greatly affect workplace safety. It refers to a person's ability to persuade others to follow safety procedures when performing organizational duties. So, people who are involved or committed to safety leadership and others who can be influenced by it are called safety leaders (Pilbeam et al., 2016). According to Wu et al. (2008), safety leadership can also be described as the process through which leaders and followers

collaborate to persuade followers to meet organizational safety objectives. For Zhao et al. (2022), safety leadership is a process of influence in which safety officers improve the organization's work environment, guide or encourage employees to regulate their own safety behavior, and help them support the company in achieving overall company safety goals. In addition, Cheung et al. (2021) define safety leadership as management behavior that improves employee safety behavior. Schwatka et al. (2019) claim that a safe environment, leaders' traits, and personal charisma are the key factors that affect safety leadership success. As such, safety leadership is a reflection of how leaders enable, motivate, and inspire followers to contribute to the effectiveness and success of the company in terms of safety. This can be seen in the implementation of safety incentive programs, coaching, caring, controlling, and controlling, as well as in the encouragement of employees to participate in safety decision-making (Wu et al., 2008; Basahel, 2021). Passenger ship leaders can raise crew SCB by implementing these indicators rigorously and consistently. In light of this, the following hypothesis can be made:

H1: Safety leadership has a direct positive effect on the ship crew's SCB.

Social Capital and SCB

Ship crew's SCB can also be influenced by social capital. The research results of Zhang et al. (2020) prove that social capital positively contributes to SCB. Social capital is conceptually defined as the collection of real or potential resources connected to an ongoing web of mutually recognized or acquainted relationships that are more or less formalized (Sadeka et al., 2023). Chiu and Kevin (2023) describe social capital as social networks and the associated reciprocity norms. According to Ivanova (2023), the only common characteristic of all social capital definitions is social relationships with productive benefits. Malhotra (2023) defines social capital as building a relationship that helps people and community-based organizations access the necessary resources. Social capital is defined as a linkage comprising networks, trust, and access to resources. As per Zhang et al. (2020), social capital comprises three dimensions, namely structure, relationships, and cognition. It is defined as the total of an individual's real and potential resources that are interwoven within their network of relationships. Social capital focuses on group capacity and patterns of relationships between people within and between groups. The focus is on social networks, norms, values, and beliefs among people that originate from group members and become norms. Therefore, social capital can play an essential role in overall progress because it can encourage a sense of mutual benefit, mobility of ideas, trust, and unity. According to Zhang et al. (2020), the dimensions of social capital include: (1) structure, which consists of social network, social participation, social interaction, social ties, and safety communication; (2) relationships, which include social trust, trust, identification norms of reciprocity, interpersonal trust and safety trust; (3) cognition, including shared goals, social trust, social reciprocity, shared vision, shared language, social goals, reciprocity, and safety goals. In light of this, social capital in the context of this study represents the social norms and relationships ingrained in social structures that allow people to safely plan their actions in order to achieve their goals; these norms and relationships are reflected in safety trust, safety goals, and safety communication (Zhang et al., 2020). Suppose the ship's crew owns these indicators. In that case, they can encourage an increase in their SCB, which is reflected in safety compliance, safety participation, mutual aid among workers, the relationship between superior and subordinate, civic virtue, and initiating change. Thus, the following hypothesis can be proposed:

H2: Social capital has a positive direct effect on the ship crew's SCB.

Safety Awareness and SCB

Empirically, SCB is also related to safety awareness. The study conducted by Li et al. (2021), Saetrevik and Hystad (2021), Uzuntarla et al. (2020), and Hussain et al. (2019) proves that safety awareness influences SCB. Safety awareness refers to individuals' knowledge and understanding regarding safety measures and protocols in a specific context. It involves recognizing potential hazards, understanding emergency procedures, and being aware of the importance of safety to prevent accidents and promote a safe environment. Safety awareness can be assessed through surveys and questionnaires that evaluate individuals' knowledge and awareness of critical safety issues (Chakrabarty, 2018). It also reflects individuals' level of knowledge and understanding regarding safety issues in various contexts, including recognizing potential hazards, understanding safety protocols and procedures, and being aware of the importance of safety in preventing accidents and injuries (Zahir et al., 2020). Safety awareness is also an employee's ability to think about safety problems and potential dangers that may arise in the workplace (Liao et al., 2014). For Fung et al. (2016), safety awareness is awareness of the importance of safety issues. Safety awareness at the behavioral level leads to behavior that increases operational safety (Kiani & Khodabakhsh, 2014). The role of safety awareness for every person in a company (organization) is very important because a lack of awareness can result in decreased safety performance. According to Yilmaz and Celebi (2015), lack of awareness can be a problem or factor that influences safety. Safety awareness can be measured through several indicators, namely cognitive,

behavioral, evaluation, awareness of health and safety, as well as awareness of danger, risk and accident prevention (Kiani & Khodabakhsh, 2014; Kallio et al., 2018; Hussain et al., 2019). If they are sufficiently owned by the ship's crew (high), these indicators have the potential to raise the SCB of the crew. Therefore, the following hypothesis can be promoted:

H3: Social capital has a positive direct effect on the ship crew's SCB.

Safety Motivation and SCB

SCB can also be influenced by safety motivation. The research results of Laurent et al. (2020), Jiang and Probst (2016), and Panuwatwanich et al. (2016) convincingly show that safety motivation is a good predictor of SCB. Conceptually, safety motivation is the willingness of employees to do their work in a safe way, which is reflected in safety behavior (Zhang et al., 2020) and the individual's willingness to apply efforts and elements related to work safety (Widyanty et al., 2020). 2021). Paolucci et al. (2020) identified several safety motivation dimensions: action preferences, social loafing, and persistence. Additionally, Zang et al. (2020) distinguished between autonomous and controlled safety motivations. Whereas controlled safety motivation refers to people acting in a certain way because of external or internal pressures, autonomous safety motivation refers to people acting in a certain way voluntarily or because of their own interests and beliefs. Therefore, safety motivation is a reflection of an individual's effort-level and values related to safe behavior, which are reflected in action preferences, social loafing, persistence, and motivating others to work safely and support work safety programs (Paolucci et al., 2020; Widyanty et al., 2021). Suppose these motivational motives exist within the crew adequately and stably in the long term. In that case, they can encourage the emergence of safety compliance, safety participation, mutual aid among workers, the relationship between superior and subordinate, civic virtue, and initiating change as a reflection of SCB. Therefore, the following hypothesis can be put forward:

H4: Safety motivation has a direct positive effect on the ship crew's SCB.

Relasi Safety Leadership, Social Capital, Safety Awareness dan Safety Motivation

Safety leadership, social capital, and safety awareness all have an impact on safety motivation in addition to SCB. Several previous studies show that safety leadership influences safety motivation (Basahel, 2021; Adjekum, 2017), social capital influences safety motivation (Zhang et al., 2020), and safety awareness influences safety motivation (Widyanty et al., 2021). It shows that safety leadership, social capital, and safety awareness are important determinants of crew safety motivation so when the conditions of safety leadership, social capital, and safety awareness are improved, they can encourage an increase in crew safety motivation. Thus, the following hypothesis can be formulated:

H5: Safety leadership has a direct positive effect on crew safety motivation.

H6: Social capital has a direct positive effect on crew safety motivation.

H7: Safety awareness has a direct positive effect on crew safety motivation.

Method

Research's Approach, Method, and Design

This research uses a quantitative approach based on the philosophy of positivism, which is used to research certain populations or samples (Sugiyono, 2016). This approach is rooted in the positivist thinking of Comte, Mill, and Durkheim and aims to recognize relationships between variables (Neuman, 2014). The research method used is a survey, which involves selecting and examining a sample of individuals from a population to determine the relationship, frequency, and distribution of variables and is used to examine various types of information, such as attitudes, beliefs, values, demographics, behavior, opinions, habits, desires, ideas, and others (Kerlinger, 2006; Widodo, 2021). Each research variable can be described from this survey method, and its relationship is known (McMillan & Schumacher, 2006). Thus, this research uses a causal design operationalized in Structural Equation Modeling (SEM).

Research Participants

The population of this study is the crew of a passenger ship anchored at TanjungPriok Port, Jakarta, in December 2023. To calculate the sample size, the total number of indicators for all variables was multiplied by five to ten, but not more than two hundred. A sample size that exceeds 200 can cause a good fit (GOF) structural model to be challenging to achieve in research using the SEM approach, especially chi-square (Hair et al., 2018). Because the number of indicators for this research is 24, the sample size is 120 crew members (5 x 24 indicators). They were chosen by chance sampling in accordance with their availability and willingness to complete the questionnaire in its entirety without being paid for the research (Widodo, 2021) by approving the

information supplied for research data and scholarly publications. The majority of them are men (97.5%), aged 31 – 40 years (35.83% and ≤ 30 years (35%), educated ANT III (30.83% and ANT I (29.17%), Sudanese married (73.33%), and had worked ≤ 5 years (33.33%).

Procedure and Materials

A questionnaire with five options was used to collect data using a Likert scale: strongly disagree/never (score = 1), disagree/rarely (score = 2), neutral/sometimes (score = 3), agree/often (score = 4), and strongly agree/always (score = 5). The survey was carried out online using Google Forms, which can be shared using the WhatsApp application. Researchers created the questionnaire based on the theoretical dimensions or indicators of the experts. Safety leadership indicators include safety coaching, safety caring, safety controlling, safety incentive system, and encouraging participation in safety decision-making (Wu et al., 2008; Basahel, 2021); social capital: safety trust, safety goals, and safety communication (Zhang et al., 2020); safety awareness: cognitive, behavioral, evaluation, awareness of health and safety, as well as awareness of danger, risk and accident prevention (Kiani & Khodabakhsh, 2014; Kallio et al., 2018; Hussain et al., 2019); safety motivation: action preferences, social loafing, persistence, encourage other workers to work safely, and promote work safety programs (Paolucci et al., 2020; Widyanty et al., 2021); and SCB: safety compliance, safety participation, mutual aid among workers, relationship between superior and subordinate, civic virtue, and initiating change (Wishart et al., 2019; Li et al., 2020; Laurent et al., 2020). The safety leadership questionnaire consists of 10 items, with corrected item-total correlation coefficient (CI-TCC) scores ranging from .510 to .828, with an alpha coefficient (AC) of .923. Social capital includes enem items, with scores of CI-TCC ranging from .709 to .821, with an AC of .911. Safety awareness consists of ten items with scores of CI-TCC ranging from .499 to .923, with an AC of .957. Safety motivation consists of nine items, with CI-TCC scores ranging from .577 to .877, with an AC of .923. Finally, the SCB includes 11 items, with scores of CI-TCC ranging from .555 to .862, with an AC of .945. All of the items are valid, and all variables are reliable because every item has a CI-TCC of $>.361$, and every variable has an AC of $>.70$ (Widodo, 2021).

Data Analysis

The structural equation model (SEM) processed by SmartPLS version 4 was used to analyze the data collected from distributing the questionnaires. To ascertain the validity and reliability of the questionnaire, thirty trial samples were used for testing. Questionnaires were used to gather data from 120 research samples after passing the validity and reliability tests. With the aid of SPSS software version 22, which was designed to describe the research variables and provide an explanation of their relationships, the results were analyzed using descriptive and correlational statistics.

Results and Discussions

Descriptive and Correlational Analysis

Table 1 displays the findings of the descriptive and correlation analyses that were performed with SPSS. The standard deviation (SD) values, which vary from 3.868 to 6.366, are smaller than the mean values, which often range from 25.22 to 47.25. As such, it provides a decent summary of the data and merits additional investigation. In the meantime, with a correlation coefficient value range of .894–.959, the findings of the correlation study between variables together are significant at $p < .01$. It demonstrates how each variable and every other variable is mutually dependent.

Table 1. The Result of Descriptive and Correlation Analysis

Variables	Mean	SD	1	2	3	4	5
Safety Leadership (X_1)	42.00	6.299	1.00				
Social Capital (X_2)	25.22	3.868	0.922	1.00			
Safety Awareness (X_3)	43.08	6.017	0.942	0.903	1.00		
Safety Motivation (Y_1)	39.30	4.983	0.914	0.894	0.945	1.00	
SCB (Y_2)	47.25	6.366	0.928	0.922	0.956	0.959	1.00

Outer Model: Measurement Model

The assessment and testing of the relationship between the constructs (latent variables) and indicators is the aim of the outer model, which presents the measurement model. Validity is established when a variable has a loading factor value of at least 0.5. Given that the loading factor value is more than 0.5, all indicators are considered valid or represent variables, according to the computation results. Strong discriminant validity is also demonstrated by the discriminant validity test results, which show that each indicator's correlation value with its own variable is higher than the indicator's correlation with other variables. Table 2 presents an

overview of the findings from tests of construct validity and reliability, which include Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) in order of lowest to highest results. All variables (constructs) have CA and CR values greater than 0.7, indicating their reliability. Similarly, all variables have an AVE value greater than (>) 0.5, demonstrating validity (Hair et al., 2018). Because they are all legitimate and trustworthy, the research variables can all be used in further analyses.

Tabel 2. Hasil Construct Reliability dan Validity

Variabel	CA	CR	AVE
Safety Leadership (X ₁)	0.807	0.808	0.565
Social Capital (X ₂)	0.768	0.768	0.685
Safety Awareness (X ₃)	0.849	0.854	0.627
Safety Motivation (Y ₁)	0.738	0.785	0.596
SCB (Y ₂)	0.799	0.844	0.519

Inner Model: Measurement Structural Model

Structural model measurements include model fit testing, R Square (R²), and hypothesis testing, which includes path coefficient and t-test. Model suitability test to determine whether a model is suitable or in accordance with empirical data. Meanwhile, the coefficient of determination (R²) is used to determine the contribution of several exogenous variables to endogenous variables according to the structural equation. The model suitability test can be seen, among other things, from the Normed Fit Index (NFI) value, with the lowest to highest range being 0–1. The model has a high fit the closer it is to 1. Conversely, the model has a low fit the closer it is to 0. The NFI value obtained by this research is 0.622, thus indicating a pretty good model fit. This means the theoretical model hypothesized in this research suits the empirical model obtained from this data. Meanwhile, the R² value for the crew SCB variable is 0.974. It demonstrates that safety leadership, social capital, safety awareness, and safety motivation account for 97.4% of changes in ship crew SCB. In contrast, factors outside the scope of this study account for the remaining 2.6%. In the meantime, the safety motivation variable has an R² value of 0.927. It shows that safety leadership, social capital, and safety awareness account for 92.7% of the variation in changes in safety motivation, with other factors accounting for the remaining 7.3%.

Hypothesis Testing

Hypothesis testing in research includes the influence of safety leadership, social capital, and safety awareness on safety motivation and SCB. The results of the path coefficients and t-value structural models are presented in Figures 1 and 2 and summarized in Table 3.

Tabel 3. Hypothesis Testing Results

Jalur	Koefisien Jalur	T _{value}	t _{table} (α = 0,05)	t _{table} (α = 0,01)	Decision
H ₁ : X ₁ – Y ₂	0.174	2.125*	1.65	2.35	Supported
H ₂ : X ₂ – Y ₂	0.218	2.896**	1.65	2.35	Supported
H ₃ : X ₃ – Y ₂	0.241	3.242**	1.65	2.35	Supported
H ₄ : Y ₁ – Y ₂	0.372	4.164**	1.65	2.35	Supported
H ₅ : X ₁ – Y ₁	0.397	3.051**	1.65	2.35	Supported
H ₆ : X ₂ – Y ₁	0.305	2.445**	1.65	2.35	Supported
H ₇ : X ₃ – Y ₁	0.276	2.195*	1.65	2.35	Supported

Note: * p = 0,05, ** p = 0,01.

All hypotheses, H₁ to H₇, were significantly supported, showing significance at t values exceeding the critical t table values for α = 0.05 and 0.01. Specifically, safety leadership, social capital, safety awareness, and safety motivation positively affect SCB, with path coefficients (γ/β) and p-values: γ = 0.174, p < 0.05; γ = 0.218, p < 0.01; γ = 0.241 p < 0.01; and β = 0.372, p < 0.01, respectively. Additionally, safety leadership, social capital, and safety awareness on safety motivation, with path coefficients and p-values: γ = 0.397, p < 0.01; γ = 0.305, p < 0.01; and γ = 0.276, p < 0.05, respectively. The smallest path coefficient observed was the impact of safety leadership on crew SCB (γ = 0.174, p < 0.05), showing a relatively small but it significant influence. The most substantial path coefficient was the influence of safety leadership on safety motivation (γ = 0.397, p < 0.01), signifying a considerable and significant impact.

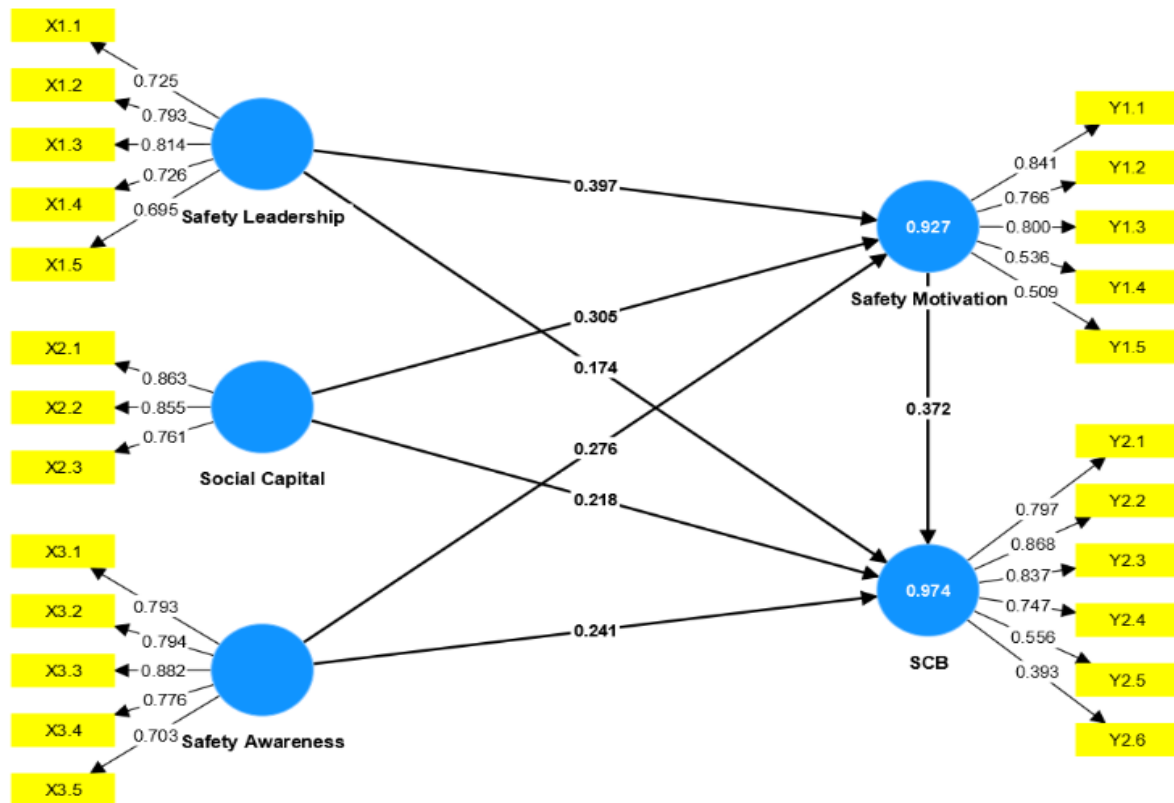


Figure 1. Path Coefficient Results

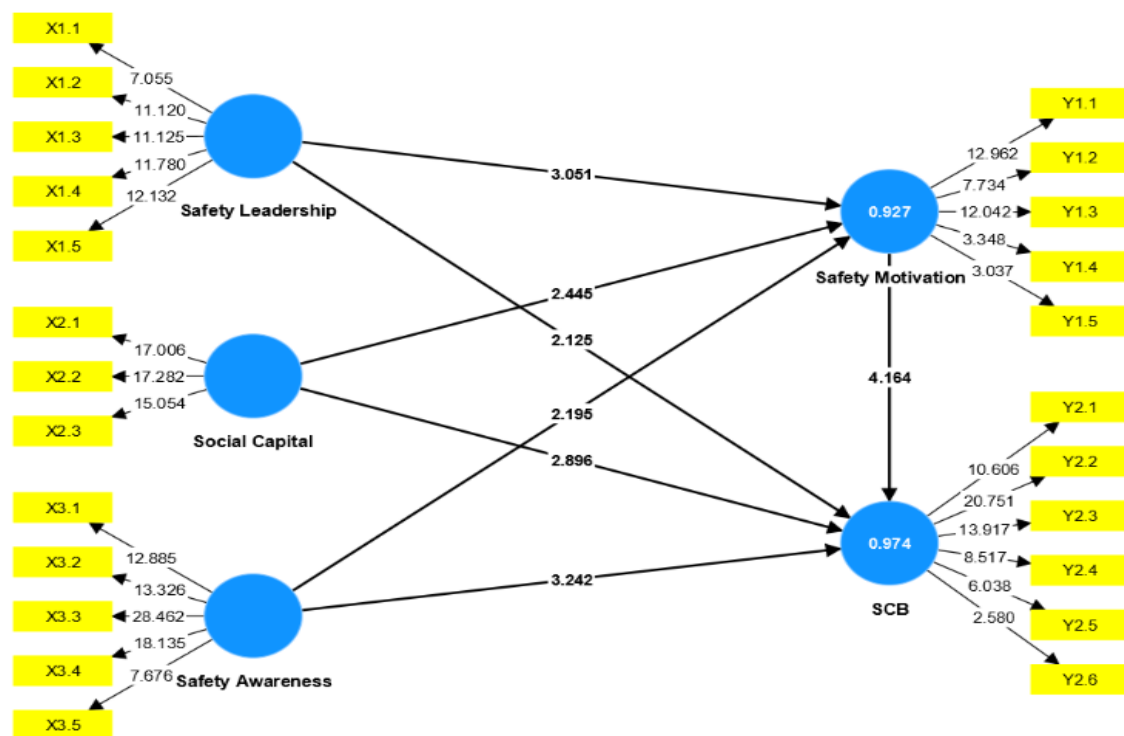


Figure 1. T-value Results

Apart from that, the results of this research also show the indirect influence of safety leadership, social capital, and safety awareness on SCB with the mediation of safety motivation. The results are summarized in Table 4. Overall, the indirect influence (mediation effect) of safety leadership, social capital, and safety awareness on ship crew SCB mediated by safety motivation is significant, indicating that the t value $>$ t table value at $\alpha = 0.05$. This shows crew safety motivation's positive and significant role in mediating the influence

of safety leadership, social capital, and safety awareness on SCB. This empirical fact shows that improving safety leadership, social capital, and safety awareness in order to increase the SCB of passenger ship crew can be done through a safety motivation mediation mechanism. The mediating influence of safety leadership on the ship crew's SCB is greater than others. It is consistent with the results of the direct influence of safety leadership on safety motivation and safety leadership on ship crew SCB, which is more dominant than others.

Tabel 4. The Mediation Effect Results

Jalur	Koefisien Jalur	t_{hitung}	t_{tabel} ($\alpha = 0,05$)	t_{tabel} ($\alpha = 0,01$)	Decision
1. $X_1 - Y_1 - Y_2$	0.148	2.318*	1.65	2.35	Significant
2. $X_2 - Y_1 - Y_2$	0.114	1.949*	1.65	2.35	Significant
3. $X_3 - Y_1 - Y_2$	0.103	2.081*	1.65	2.35	Significant

Note: * $p = 0,05$

This research indicates that safety leadership has a positive and significant effect on the SCB of passenger ship crew. It means that safety leadership is an essential predictor of the ship crew's SCB. This finding cannot be separated from the existence of safety leadership as an individual's way of influencing, motivating, and enabling other people to contribute to the effectiveness and success of the organization in terms of safety, which is manifested, among other things, by safety coaching, safety caring, safety controlling, safety incentive system and encouraging workers. ' participation in safety decision-making (Wu et al., 2008; Basahel, 2021). When safety leadership is in good and consistent condition, it can stimulate increased SCB as crew behavior related to safety and promotion of safety programs related to accidents and unsafe situations in the workplace, for example, safety compliance, safety participation, mutual aid among workers, relationship between superior and subordinate, civic virtue, and initiating change (Wishart et al., 2019); Li et al., 2020; Laurent et al., 2020). These findings are in line with and confirm the results of previous research conducted by Li et al. (2020), Lu and Yang (2010), Zhao et al. (2022), and Subramaniam et al. (2022) which proves that safety leadership has a significant influence on SCB.

This research also reveals that social capital has a positive and significant effect on the SCB of passenger ship crew. It shows that social capital is a crucial antecedent for SCB of passenger ship crew. This empirical fact is related to social vitality as social norms and relationships embedded in social structures that enable people to plan their actions safely in achieving goals, which are reflected in action preferences, social loafing, and persistence (Paolucci et al., 2020). Suppose social capital aspects are in adequate condition. In that case, it can stimulate an increase in ship crew SCB, which is manifested in compliance with safety regulations, participation in safety activities, mutual cooperation between workers, relationships between superiors and subordinates, civil virtue, and starting change (Wishart et al., 2019; Li et al., 2020; Laurent et al., 2020). These findings are in line with and confirm previous studies which prove that social capital has a significant effect on SCB (Zhang et al., 2020).

This research also proves that safety awareness has a positive and significant effect on the SCB of passenger ship crew. This indicates that safety awareness is an essential predisposition for SCB, so if it is increased, it can positively contribute to SCB. Safety awareness is the condition of a person (including ship crew) who is aware of their rights and responsibilities regarding safety issues and potential dangers that may arise in their workplace or on a ship, which is reflected in their cognitive, behavioral, evaluation, awareness of health and safety, as well as awareness of dangers, risks, and accident prevention (Kiani & Khodabakhsh, 2014; Kallio et al., 2018; Hussain et al., 2019). These aspects, if in high and relatively permanent conditions, can encourage increased SCB, for example, compliance and participation in safety regulations (Wishart et al., 2019; Li et al., 2020; Laurent et al., 2020). This finding is consistent and confirms the results of previous research, which proves that safety awareness influences SCB (Li et al., 2021; Saetrevik & Hystad, 2021; Uzuntarla et al., 2020; Hussain et al., 2019).

This research also found a positive and significant influence of safety motivation on the SCB of passenger ship crew. This empirical fact confirms that safety motivation is an important determining factor for SCB. Safety motivation is a person's willingness (including ship crew) to carry out safe behavior and its associated values, manifested in action preferences, social loafing, persistence, encouraging other workers to work safely, and promoting work safety programs. When in high conditions, these aspects of safety motivation can stimulate an increase in ship crew SCB, such as compliance and participation in regulations and safety activities. These findings align with and confirm previous research results, proving that safety motivation influences SCB (Laurent et al., 2020; Zhang et al., 2020).

This study also demonstrates that safety leadership has an impact on safety motivation in addition to SCB. It shows that safety leadership is a good predictor of the safety motivation of passenger ship crew, so if the condition of the leader's safety leadership is improved, it can have positive implications for the safety motivation of the crew. Thus, to create conditions for safety motivation for ship crew, good support from safety leadership from leadership elements is needed as a way to influence, motivate, and enable ship crew to contribute to the effectiveness and success of shipping companies in terms of safety, which is reflected in safety guidance or training, concern safety, safety controls, safety incentive systems, and encouraging worker participation in safety decision making. These findings confirm previous studies conducted by Adjekum (2017), Basahel (2021), and Subramaniam et al. (2022), which prove that safety leadership influences safety motivation.

This research also reveals that social capital has a positive and significant effect on the safety motivation of ship crew. This proves that social capital is a crucial antecedent for safety motivation. The consequence is that when the condition of social capital is improved, it will positively contribute to the safety motivation of the ship crew. Social capital is social norms and relationships embedded in social structures that enable people (including ship crew) to plan their actions safely to achieve goals reflected in safety trust, safety goals, and safety communication (Zhang et al., 2020). Suppose crew members' social capital is adequate. In that case, it can stimulate increased safety motivation, which is actualized in action preferences, social laziness, perseverance, encouraging other workers to work safely, and promoting work safety programs. This finding is consistent with the study results of Zhang et al. (2020), which proves that social capital influences safety motivation.

The study's findings also demonstrate how safety awareness affects safety motivation. It indicates that safety awareness is an essential predictor of crew safety motivation. As a consequence, improving safety awareness can have a positive effect on crew safety motivation. Safety awareness is the condition of a person (including ship crew) being aware of their rights and responsibilities regarding safety issues and potential dangers that may arise in their workplace, which includes elements of cognitive, behavioral, evaluation, awareness of health and safety, as well as awareness of danger, risk and accident prevention. If the crew's safety awareness is high, then this can positively impact their safety motivation. These findings align with and confirm the research results of Widyanty et al. (2021), which prove that safety awareness significantly influences safety motivation.

In addition, the results of this research found new empirical facts regarding the indirect (mediated) influence of safety leadership, social capital, and safety awareness on the SCB of passenger ship crew with the mediation of safety motivation. These findings do not just confirm the results of previous research, which were used as a reference or basis for building research hypotheses, for example, the influence of safety leadership, social capital, and self-awareness on safety motivation (Adjekum, 2017; Basahel, 2021; Subramaniam et al., 2022; Zhang et al., 2020; Widyanty et al., 2021) and the influence of safety motivation on SCB (Laurent et al., 2020), but also found a mediation model of the influence of safety leadership, social capital, and safety awareness on ship crew SCB through safety motivation based on data obtained from the crew of a passenger ship operating at the Port of TanjungPriok Jakarta in 2023 as novelty. Thus, these findings positively contribute to the development of transportation management studies, especially those related to the role of safety motivation in mediating the influence of safety leadership, social capital, and safety awareness on ship crew SCB. Consequently, these findings must be discussed critically before being adopted, adapted, or modified.

Conclusions

The crew's SCB is very important for shipping activities. Therefore, it is essential to investigate SCB from the perspectives of safety leadership, social capital, safety awareness, and safety motivation. This research found the influence of safety leadership, social capital, safety awareness, and safety motivation on ship crew SCB; the influence of safety leadership, social capital, and safety awareness on crew safety motivation; and the influence of safety leadership, social capital, and safety awareness on ship crew's SCB with the mediation of safety motivation. These findings not only confirm several previous research results, which were used as a reference for developing this research hypothesis and refute several other contradictory research results, but also show new findings regarding the role of safety motivation in mediating the influence of safety leadership, social capital, and safety awareness on crew SCB. Therefore, this research promotes a new empirical model of the influence of safety leadership, social capital, and safety awareness on ship crew SCB through safety motivation. This new model can be discussed in depth and critically by researchers and practitioners before being adopted, adapted, or modified without ignoring several limitations of this research. First, this research only focuses on one single data source (ship crew), even though there are other data sources that can be

utilized, such as leadership. Second, this research only accommodates several theoretical dimensions/indicators from several experts, even though there are other dimensions/indicators from experts that can be considered. Third, this research only uses a quantitative approach, even though there are other approaches that might be accommodated, for example, a qualitative approach. Therefore, future research needs to consider additional data sources, accommodate different dimensions/indicators, and use mixed methods (quantitative and qualitative).

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