FACTORS AFFECTING SAFETY MANAGEMENT SYSTEM PERFORMANCE: THE MEDIATING ROLE OF SAFETY CULTURE

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ABSTRACT

This research deals with an analysis of Safety Management System performance (SMSP) in a military aviation organization which is the Royal Malaysian Air Force (RMAF). Specifically, the scope of analysis addresses the factors of Organizational Identity (OI), Organizational Behavior (OB) and Situational Awareness (SA) and how these affects the SMS Performance. The interest is to investigate whether Safety Culture (SC) plays a significant mediating role that affects the SMSP. The study population consisted of pilots and engineers from different air bases throughout the country. The results indicate that OI, SA and SC showed significant impact on the RMAF’s SMSP. However, Safety Culture was found to have a significant mediating effect only for Organizational Identity and Situational Awareness.

Keywords: Safety Management Systems, Organizational Identity, Organizational Behavior, Situational Awareness, Safety Culture

INTRODUCTION

Safety Management Systems (SMS) is outlined as a scientific approach to managing safety, together with structures, responsibilities, policies and procedures of the organization (Flight Safety Foundation, 2005). The Royal Malaysian Airforce (RMAF) has adopted SMS in all their bases since 2010. Nevertheless, even though RMAF had taken the necessary precaution steps to prevent aviation mishaps, military aircraft accidents and incidents still occurs as before the implementation of RMAF SMS (RMAF Inspectorate Annual Report, 2016). The following table gives the overview of RMAF accident/incident rates (RMAF Inspectorate Annual Report, 2016) for the period of 3 years before the implementation of SMS and 3 years after it was implemented:
Table 1: RMAF Aviation Accident and Incident Rate

<table>
<thead>
<tr>
<th>Ser</th>
<th>Year</th>
<th>Total Hours Flown (Hours)</th>
<th>Accident</th>
<th>Accident Rate (%)</th>
<th>Incident</th>
<th>Incident Rate (%)</th>
<th>Overall Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2010</td>
<td>41,413.4</td>
<td>1</td>
<td>0.24</td>
<td>8</td>
<td>1.93</td>
<td>2.17</td>
</tr>
<tr>
<td>2.</td>
<td>2011</td>
<td>36,826.8</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
<td>1.90</td>
<td>1.90</td>
</tr>
<tr>
<td>3.</td>
<td>2012</td>
<td>36,943.2</td>
<td>0</td>
<td>0.0</td>
<td>6</td>
<td>1.62</td>
<td>1.62</td>
</tr>
<tr>
<td>4.</td>
<td>2013</td>
<td>34,398.6</td>
<td>3</td>
<td>0.87</td>
<td>5</td>
<td>1.45</td>
<td>2.33</td>
</tr>
<tr>
<td>5.</td>
<td>2014</td>
<td>31,130.0</td>
<td>0</td>
<td>0.0</td>
<td>4</td>
<td>1.28</td>
<td>1.61</td>
</tr>
<tr>
<td>6.</td>
<td>2015</td>
<td>34,639.2</td>
<td>0</td>
<td>0.0</td>
<td>3</td>
<td>0.87</td>
<td>0.87</td>
</tr>
<tr>
<td>7.</td>
<td>2016</td>
<td>25,223.8</td>
<td>4</td>
<td>1.59</td>
<td>3</td>
<td>1.19</td>
<td>2.78</td>
</tr>
</tbody>
</table>

Improving the SMSP in terms of flight safety is therefore crucial to avoid loss of aircrew life, government/public assets and the RMAF image as a credible aviation organization. Therefore, this research is intended to study the important organizational factors that might affect the performance of RMAF’s SMSP. The research will benefit towards improving the safety culture where organizational factors play an important role to the performance of SMS. Continuous improvement in flight safety will lead to a high-performance culture enabling the RMAF to perform its mandate more effectively.

**LITERATURE REVIEW**

Theory Y and Theory X (McGregor, 1960) is used in this study. ‘Theory X’ and ‘Theory Y’ are the theory of human motivation and management. They were created and developed by Douglas McGregor in the 1960s. These theories describe two different models of workforce motivation used by managers in human resource management, organizational behavior, organizational communication and organizational development.

Literature review of related works has shown that some studies have been made towards establishing the various individual and organizational factors that contributes to effective safety management systems performance especially in aviation. Chen and Chen (2014) reported that the dimensions of aviation safety climate can be arranged into seven themes: safety promotion and training, commands and documentation, response plan and emergency preparedness, executive management commitment, safety management strategy, safety oversight, and audit about aviation safety. In a study conducted by O’Connor, O’Dea, Kennedy and Buttrey (2011) revealed that supervision/management, safety systems, operations personnel, communication, rule/procedures, education/training, resources and risk were among the most commonly used dimensions of any aviation safety climate which is closely related to safety culture. Zhang, Wang,
Luo and Tang (2013), Oster, Strong and Zorn (2013), and Sieberichs and Kluge (2016) also identified the human factor as another frequently used dimension for aviation safety. Remawi, Bates and Dix (2011) has also identified the crucial role of aviation employees' attitude to safety culture as very important to effective implementation of safety management systems performance. The constructs adopted in this current study has sought to incorporate the various dimensions as captured in the above studies into three factors: organizational identity, organizational behaviour and situational awareness that influences the safety culture thus contributing to the Malaysian Air Force SMSP.

The underlying assumption of our model is that OI, OB, and SA can influence the flow of SC among the RMAF personnel, thereby improving their awareness and attitude about work, whereby influences the SMSP. A better understanding of these relationships can allow RMAF managers to know their personnel identification towards the organizational safety culture, and to shape their safety management in improving their performance.

**ORGANIZATIONAL IDENTITY (OI)**

The attainment of an organizational is principally relies on its employee behavior. To relates the employee in strengthening its organization objectives are the influence of the OI itself and by the influenced of the employee identification. OI has a reciprocal relationship with individual, OI can affect individual behavior and individual behavior can affect OI (Pratt & Foreman, 2000). This strong relationship as accordance to the study might result a strong connectivity in influencing the SMSP among RMAF personnel.

Albert, Ashforth and Dutton (2000), stated that “the beauty of the identity and identification concepts is that they provide a way of accounting for the agency of human action within an organizational framework”. OI is seen as a basis for employee identification with the organization (Schultz, Hatch, & Larsen, 2000). According to Patchen's (1970), (cited in Witting, 2006), in identification theory, identification includes 3 elements for example feeling of commonality with the organization, attitudinal and activity support for the organization, and perception of shared characteristic with alternative structure members. This is consistent with Cheney and Tompkins' (1987) who declared that employee’s perceptions of an organization’s culture might influence the degree to that staff identity with the organization. OI will influence each the satisfaction and behavior of staff and effectiveness of organization (Albert et. al., 2000, Ashforth & Mael, 1989).

Positive OI factors will create results for the work relation of good culture and behavior in the field of safety, including motivation, performance and satisfaction, as well as the effectiveness of safety management systems in the RMAF. In relations to the above literature review, it is foreseen that OI might affect the overall views of the employee towards the organizational objectives; in RMAF aviation safety context, the main objectives is the successfullness of SMS implementation in reducing the aviation mishaps i.e. aircraft accidents and incidents. According to Witting (2006), “a strong organizational identity has a positive influence on knowledge, attitude and regarding the organizational objectives”. Therefore, it is relevance and significant to consider OI as one of the important elements that might affect the performance of an organization objectives.
ORGANIZATIONAL BEHAVIOR (OB)

OB is a study that determines the way people interact in groups in creating to more efficient organization. Motivation is a portion of OB which has a positive influence on the performance of an organization. Wiley (1997) mention that according to Abraham Maslow's Hierarchy of Needs Theory, workplace behavior is posited to be determined by a person's current need state in certain universal need categories. A second type of personality perspective considers the influence of a small set of psychological motives on behavior and performance. This perspective focuses on achievement motives. Mohammad Ather, Aktaruzzaman Khan and Hoque (2011) on the other hand mentioned that theories of motivation are expectancy theory, equity theory and goal setting theory attempt to focus process on the perspective of motivation.

Hudson, (2007), argue that intrinsic motivation may be more powerful than extrinsic motivation, thus even if behavioral changes occur, the underlying values and beliefs of individuals may remain unchanged. As articulated by Herzberg’s (1966), Graham and Messner (1998), Tietjen and Myers (1998) and Wilson (2018), explains that motivating factors are intrinsic factors in the workplace, including achievement, achievement recognition, self-help, responsibility, and growth or progress, these factors may contribute to job satisfaction, but will not cause job dissatisfaction in the workplace. These extrinsic factors consist of company policies, administration, supervision, interpersonal relationships, working conditions, salaries, status and safety. Employees are valuable assets and generally it is agreeable that a motivated employee has a significant impact on the organization.

There are a lot of accidents theories that was developed to relate how OB can contribute to a major mishap in aviation. Domino Theory (Bird, 1974) and the Swiss Cheese Model of Error Causation (Reason, 2000) were among the contemporary accident model and theories that were based on organizational behavioral aspects. In the context of both theories developed, the OB comprise of latent factors which includes unsafe supervision, organizational influences and social environment (Uryan, 2010). Uryan (2010) had also established that both Bird (1974) and Reason (2000) had conclude that aviation mishaps are the result contributed by a series of events, which involve collective organizational factors, in which had caused the ultimate causation i.e. individual’s unsafe action.

SITUATIONAL AWARENESS (SA)

Nguyen, Lim, Nguyen, Gordon-Brown and Nahavandi (2019) stated that SA is a vital component in human information processing and crucial in aviation staffs’ decision-making processes. Endsley and Garland (2000) detailed that SA is an approach to understanding the cognitive processes involved in decision making in comprehensive and dynamic environments and SA has its origin in aviation. Having SA is an essential indication of knowing what is happening in the environment and the alertness regarding the potential risk that might be faced. Daily activities require a dynamic update of the situation to function effectively. The high level of SA is the most important aspect to consider in the field of aviation. As stated by Milanovich, Driskell, Stout and Salas (1998) (cited in Masys, 2005), SA should be considered as an essential requirement for competent
performance in dynamic environments with inaccurate and incomplete SAs often resulting in dangerous and fatal consequences.

Flin (1996) has outlined SA as a method of recognition, designation and continuing observation of the environment setting. As articulated by Endsley (1999), SA encompasses three elements; perception of elements in the current situation, comprehension of current situation and projection of future status. The information perceived, comprehended and projected is a function of not only the cognitive limitation of the aircrew but also socio-technical elements of the system (environment). As mention by Entin and Entin (2000), the coordination and data exchange inside a team atmosphere are related to the formation of shared SA.

Endsley and Garland (2000) explained that most researchers and practitioners have considered SA to be essential for accurate decision-making and performance in various areas of work such as air traffic control, nuclear power plants, aviation, medicinal and driving. SA is a cognitive construct that refers to the understanding of external events and is defined as the perception of elements in the environment in the volume of time and space, understanding their senses and their projection which will lead to improved decision-making and productivity (Endsley, 2017).

SAFETY CULTURE (SC)

SC is a manner of how safety is seen, appreciated and prioritized within the organization. This reflects the true commitment to safety at all levels of the organization. It is also described as "how an organization acts when no one sees it". SC is often considered a sub-group of organizational culture, where beliefs and values are particularly relevant to safety issues (Clarke, 2003). In order to achieve acceptable safety indicators, organizations need both a safety management system and a healthy computer. Organizational practices affecting the performance and reliability of safety systems are in fact related to how safety is managed in aeronautical organizations, leading to a "good" or "lax" SC (Kletz, 2018; Reason, 2000).

McDonald, Corrigan, Daly and Cromie (2000), had established three main concepts that have a central role in explaining what the organizational role towards aviation safety is. The three concepts are the philosophy of SMS, safety climate and finally is the SC in an organization. McDonald et al. (2000) had also identified that climate related to the perception of an organization whilst SC is a more global concept.

SAFETY MANAGEMENT SYSTEM PERFORMANCE (SMSP)

Kim and Choi (2016) mentioned that, to successfully operate SMS, the SC factors such as the level of staff awareness, safety attitude and belief must be combined. SMS strategies encompass the organization's, internal safety environment and performance, external regulation and standard, cost factor, the organization's resource capability, stakeholder's influence and organization's culture of commitment resulting in safety decision and action, Kevin Loebbaka and Lewis (2009). According to Santos-Reyes & Beard, (2002), (cited by Hsin Lin, 2012), the execution of the SMS and its performance can become an important interrogation point by the competent authority for aviation. Flight Safety Foundation, (2005), (cited by Hsin Lin, 2012), mentioned that leadership and answerableness ought to be the key factors within the implementation of SMS, particularly within the development of SC for the airline. As stated by Kevin Loebbaka and Lewis, (2009), managers
who themselves involves in the creation, implementation, rewards and recognition of the SMS will generate an effective organization. SMS is an important dimension of SC for two reasons: effective SMS as a set of strategies, functions and roles, as well as compliance with external security regulations, (Álvarez-Santos, Miguel-Dávila, Herrera, & Nieto, 2018; Li, & Guldenmund, 2018). The successful execution of SMS requires the combination of mature SC factors such as the members’ awareness attitude, confidence and enthusiasm, Kim and Choi (2016). The implementation of SMS with a positive organizational SC will generate and improve the SMSP in RMAF.

Therefore, this study aims to examines the relationship between organizational identity, organizational, situational awareness, safety culture and safety management system performance. The hypotheses are:

H1: OB will be positively associated with SC
H2: OB will be positively associated with SMSP
H3: OI will be positively associated with SC
H4: OI will be positively associated with SMSP
H5: SA will be positively associated with SC
H6: SA will be positively associated with SMSP
H7: SC will be positively associated with SMSP

MEDIATING ROLE OF SAFETY CULTURE (SC)

According to Snape and Redman, (2010), personal success should be a means of achieving profitable organizational performance. Organ (2018) believed that the conduct of an organization’s citizenship is an individual’s behavior and that, since its choice, is not directly defined in the organization’s official reward system, it poses difficulties in improving effectiveness and efficiency of the organization’s performance. According to Seibokaite and Endriulaitiene, (2012) individual effects (personality traits) and organizations (which are considered a safe and motivated work environment) are important factors in performance at work. A study by Feng Jing, Avery, and Bergsteiner, (2011) reported that the organizational climate (OC) has a direct effect on group performance.

Qayoom & Hadikusumo, (2019) proved that the safety culture is significantly related to safety performance of the organization at the middle management and operational level. Endsley (1988) states that SA is formally defined as “perceptions of the elements in the environment in quantity of time and space, understanding the meaning and projection of their status in the near future”. High SA levels can be considered the most important aspect of successful SMS performance in aviation. Hughes, Newstead, Anund, Shu & Falkmer (2015) reports that the development of human factors skills (such as communication, effective teamwork, task management, SA, writing procedures) is applicable for work, to have a positive impact on safety and efficiency of the maintenance operation. Otherwise the team must have the time to obtain the necessary SA for team coordination or the state of the human machine interface to SMSP. This variable is considered important to support the hypothesis.

Hopkins (2006) found that, SA emerged as an approach to transform the SC. SA is recognizing what is going on around you from where you are, where you are considering yourself or something
around you is a threat to your health and safety. Hopfl (1994) states that the SC is an interpretive tool to explore how an entrepreneur successfully launches the SA program by creating a culture and an employee who is more aware of the situation. According to Joy and Griffiths (2005), SA is a cultural approach to safety, but also a form of safety assessment and has been characterized as an informal evaluation of daily tasks. Therefore, the hypotheses can be constructed as below:

H8: SC mediates the relationship between OB and SMSP
H9: SC mediates the relationship between OI and SMSP
H10: SC mediates the relationship between SA and SMSP

METHODOLOGY

A questionnaire was designed in which the first part is getting the demographic background of the respondents. Using validated constructs from previous research, the second part looks at the relationships between Organizational Identity (Brickson, 2002), (Hsin Lin, 2012), Organizational Behavior (Williams & Anderson, 1991), (Teh & Yong 2011), Safety Culture (Hsin Lin, 2012) and SMSP (Hsin Lin, 2012). The target population employed in this research are RMAF pilots and engineers who are serving in Klang Valley, Kuantan Air Base, Butterworth Air Base, Gong Kedak Air Base and Kuching Air Base. A non-probability sampling technique was chosen which convenience sampling were used in this research. Data was collected through cross-sectional survey using questionnaires distributed among the RMAF pilots and engineers. The collected data were then analyzed using SmartPLS 3 (Partial Least Squares).

RESULT

There was a total of 226 respondents involved in giving their response of which 117 of it comprise of RMAF pilots while the remaining 109 comprise of RMAF engineers. The research model was tested based on structural equation modeling using Partial Least Squares (PLS). This research used this statistical technique to test the predictive ability of customer satisfaction. The Smart PLS software version 3.0 (Ringle, Wende & Becker, 2015) was used to analyze the data with the application of bootstrapping procedures to determine the significant level of factor loading and path coefficient. According to Anderson and Gerbing (1988) two stages of procedures to assess the model, this study evaluated both measurement model and the structural model.

An outer model identified the relationships between unobserved construct and its underlying items (Henseler, Christian, Ringle & Sinkovics, 2009). The reliability of scale was tested based on the factor loading of items composite reliability and Cronbach’s alpha (Henseler et al., 2009). Then the convergent validity which was decided on the values of Average Variance Extracted (AVE) (Hair, Ringle & Sarstedt, 2011). The discriminant validity was evaluated by comparing the square root of AVE of constructs with correlations between other constructs (Fornell & Larcker, 1981). Based on Table 2, the measurement model is satisfactory. All items under study loaded highly on relevant constructs and their loadings exceeded the cut-off value of 0.5 (Table 2) (Anderson and Gerbing, 1988). Therefore, the reliability of individual items is sufficient. The values of composite reliability and Cronbach alpha for OB, OI, SA, SC and SMSP surpassed the minimum cut-off point of 0.70 as
recommended by Chin (2010) and Nunnally (1978) (Table 2). Therefore, all five constructs meet the requirement of construct reliability.

For the convergent validity, the values of AVE must exceed the recommended value of 0.50 (Hair et al., 2013). All the values of AVE for all constructs exceeded 0.50 (Table 3). This indicates that each construct was able to explain more than 50% of variance in each respective indicator. The convergent validity was supported. Table 3 showed that the square root of AVE is greater than correlations between constructs in rows and columns which provide adequate support for discriminant validity (Fornel & Larcker, 1981).

Table 4 and Figure 1 shows the results of the structural model from PLS output. OI, and SA are significantly associated with SC (β=0.274, p<0.001), (β=0.250, p<0.001), respectively and explaining 20% variation in SC. OI, SA and SC are significantly associated with SMP (β=0.144, p<0.001), (β=0.177, p<0.001), (β=0.476, p<0.001). Therefore, the results support the hypothesis 3, 4, 5, 6 and 7. Hypothesis 1 and 2 were not supported (Table 4).

The mediating hypotheses were also supported showing that SC mediates the relationship between OI and SMSP (β=0.118, p<0.001), and SC also significantly mediates the relationship between SA and SMSP (β=0.119, p<0.001). SC did not mediate the relationship between OB and SMP (Table 4).

The coefficients of determination (R2) are 20% for SC and 40.9% for SMSP. It can be interpreted that OB, OI, SA and SC explain 40.9% total variation in SMSP.

Stone-Geisser’s Q2 value (Geisser, 1975) was used to evaluate the predictive ability of the model. Value greater than zero indicate that the model has predictive ability (Fornell & Cha, 1994). In this study the Q2 for SC and SMSP were 0.119 and 0.259 respectively (Table 5). The Q2 values are greater than zero, therefore it can be concluded that the structural model has predictive relevance (Fornell & Cha, 1994).

### Table 2: Construct reliability and convergent validity

<table>
<thead>
<tr>
<th>CONSTRUCT</th>
<th>LOADINGS</th>
<th>C R</th>
<th>C A</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization Identity</td>
<td></td>
<td>0.915</td>
<td>0.878</td>
<td>0.764</td>
</tr>
<tr>
<td>SB13</td>
<td></td>
<td>0.814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB14</td>
<td></td>
<td>0.865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB15</td>
<td></td>
<td>0.897</td>
<td></td>
<td></td>
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<tr>
<td>SB16</td>
<td></td>
<td>0.836</td>
<td></td>
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</tr>
<tr>
<td>Organization</td>
<td></td>
<td>0.894</td>
<td>0.815</td>
<td>0.701</td>
</tr>
<tr>
<td>SB22</td>
<td></td>
<td>0.787</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB23</td>
<td></td>
<td>0.862</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB24</td>
<td></td>
<td>0.828</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SB25</td>
<td></td>
<td>0.859</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situation Awareness</td>
<td></td>
<td>0.909</td>
<td>0.875</td>
<td>0.710</td>
</tr>
<tr>
<td>SB32</td>
<td></td>
<td>0.756</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB33</td>
<td>SB34</td>
<td>SB35</td>
<td>SB36</td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Safety Culture</td>
<td>0.815</td>
<td>0.859</td>
<td>0.775</td>
<td>0.876</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SB41</th>
<th>SB42</th>
<th>SB43</th>
<th>SB44</th>
<th>SB45</th>
<th>SB46</th>
<th>SB47</th>
<th>SB48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Culture</td>
<td>0.750</td>
<td>0.843</td>
<td>0.831</td>
<td>0.833</td>
<td>0.861</td>
<td>0.856</td>
<td>0.802</td>
<td>0.860</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>OB</th>
<th>OI</th>
<th>SA</th>
<th>SC</th>
<th>SMSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB</td>
<td>0.837</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OI</td>
<td>0.586</td>
<td>0.874</td>
<td>0.843</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>0.494</td>
<td>0.519</td>
<td>0.843</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>0.274</td>
<td>0.302</td>
<td>0.488</td>
<td>0.849</td>
<td></td>
</tr>
<tr>
<td>SMSP</td>
<td>0.435</td>
<td>0.440</td>
<td>0.569</td>
<td>0.662</td>
<td>0.847</td>
</tr>
</tbody>
</table>

Note: Diagonals represent the square root of AVE while off-diagonals represent the correlation.

### Table 3: Discriminant validity (Fornell-Larcker Criterion)

<table>
<thead>
<tr>
<th></th>
<th>OB</th>
<th>OI</th>
<th>SA</th>
<th>SC</th>
<th>SMSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB</td>
<td>0.837</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>OI</td>
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<td>0.874</td>
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<td></td>
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<td>0.847</td>
</tr>
</tbody>
</table>

Notes. AVE=Average Variance Extracted, CR=Composite Reliability, CA=Cronbach's Alpha,

### Table 4: Summary of structural model

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path Coefficients</th>
<th>Beta</th>
<th>Sample Mean</th>
<th>Standard Deviation</th>
<th>T Statistics</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>OB → SC</td>
<td>0.044</td>
<td>0.051</td>
<td>0.065</td>
<td>0.675</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>
H2: $OB \rightarrow SMSP$  
\[ \beta = -0.016 \quad t = 0.275 \]  
Not Supported

H3: $OI \rightarrow SC$  
\[ \beta = 0.274 \quad t = 3.169 \]  
Supported

H4: $OI \rightarrow SMSP$  
\[ \beta = 0.144 \quad t = 2.148 \]  
Supported

H5: $SA \rightarrow SC$  
\[ \beta = 0.250 \quad t = 3.544 \]  
Supported

H6: $SA \rightarrow SMSP$  
\[ \beta = 0.177 \quad t = 2.505 \]  
Supported

H7: $SC \rightarrow SMSP$  
\[ \beta = 0.476 \quad t = 9.006 \]  
Supported

H8: $OB \rightarrow SC \rightarrow SMSP$  
\[ \beta = 0.021 \quad t = 0.661 \]  
Not Supported

H9: $OI \rightarrow SC \rightarrow SMSP$  
\[ \beta = 0.118 \quad t = 3.023 \]  
Supported

H10: $SA \rightarrow SC \rightarrow SMSP$  
\[ \beta = 0.119 \quad t = 3.479 \]  
Supported

**Table 5: R-Square and Q-Square Values**

<table>
<thead>
<tr>
<th></th>
<th>R Square</th>
<th>Interpretation</th>
<th>Q-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td>0.200</td>
<td>Substantial</td>
<td>0.119</td>
</tr>
<tr>
<td>SMSP</td>
<td>0.409</td>
<td>Substantial</td>
<td>0.259</td>
</tr>
</tbody>
</table>

**Figure 1: The structural mode**
CONCLUSION

The results showed that OI and SA significantly positively associated with SC, but OB does not significantly associate with SC. This may suggest that, OB plays a lesser role in a highly regulated environment like the RMAF. Secondly, OI and SA are positively associated with the performance of the SMSP. OB also did not significantly associate with SMSP. Third, SC significantly positively associated with the performance of Safety management system. Finally, OI and SA through the mediation of SC positively contributed significantly to the performance of the SMSP in the RMAF. Overall, the findings point to the strong role of OI and SA to influence the SC. The RMAF is therefore recommended to formulate policies and activities that will increase staff motivation and job satisfaction that will strengthen their organizational identification towards the RMAF.

The results of this study were only limited to only RMAF pilots and engineers at selected RMAF bases. In order to strengthen the credibility of the results, a bigger sample coming from all the bases could be performed. The study can also be conducted in a more holistic manner, involving officers at different levels of management in all RMAF bases. A theoretical extension could be to investigate other possible organizational factors such as the role of top management commitment and leadership.

A similar study could also be done at other Military organizations such as the Royal Malaysian Navy and a comparative analysis could yield some interesting insights towards contributing to the overall effectiveness of Safety Management Systems performance of the Malaysian Armed Forces.

To generalise the contribution of this study towards other non-aviation sectors, the results obtained could help organisations prioritise on those areas most likely to improve safety performance. It could also provide future guidance towards engaging and managing commitment to established standards in safety management systems, as well as guidance for reviewing, auditing or investigating an organisation’s safety management processes.

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