Enhance Safety and Efficiency by Controlling and Managing the Slip and Lapse Made by Individuals

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Abstract: The purpose of the project is to identify factor that will cause slip and lapse and to reduce the maintenance error made by workers in slip and lapse. The project will be in quantitative and the instrument used is a survey that will be evaluated for the needs of human error identification in the base maintenance. The survey will be given to the workers of a company in Subang area. The data collected from the survey will be calculated using the SPSS to test the reliability of the question.

Keywords: Miantenance errors, slip and lapse, aircraft maintenance technicians, SPSS

I. INTRODUCTION

Overview

In this research, we analyze the improvement of safety and efficiency for the controlling and managing the individual slip and lapse in the workplace. It is a human error problem and one of skill-based motion error types.

Recognition of human factors leads to an environment that improves quality and continuously guarantees the safety of workers and aircraft, more involvement and responsible worker. More specifically, a small error reduction can benefit the aviation industry.

Statement of problem

Slip and lapse are more general than mistakes because they spend most of the time to implement the actually learned procedure. In other words, the probability of accidentally using a specific step in a learned procedure depends on the context, but it is usually 1% to 5%. It is more likely that you will get lost in one of the steps provided by regulation or problem-solving behaviour. Slip and lapse are distinguished from mistake due to the cause of failure.

Objectives

The main purpose of this research is to enhance safety and efficiency by controlling and managing the slip and lapses made by the individual. Dhaman (2016) states that human error (slip and lapse) tend to occur during highly routine activities, when attention is diverted from a task, either by thoughts or external factors [1]. Generally, when these errors occur, the individual has the right knowledge, skills, and experience to do the task properly.

The task has probably been performed correctly many times before. Even the most skilled and experienced people are susceptible to this type of error.

Scope and limitation

The research is conducted in Aircraft Maintenance Company. Due to the topic is not focusing on any organization or personnel, the questionnaire is on general knowledge on how human negligence can affects in airplane accidents. Thus, it will not consist privacy of any organization and personnel but only questionnaire on general knowledge about how human negligence.

II. LITERATURE REVIEW

If an action is simply left or is not executed, then that error is called an extinct time. "Slip and Lapse Errors are the ones that occur when running an error in a verb sequence or storage phase." The reason is referring to these errors as failures in the modality of action control: at this level, errors happen because we do not perform the appropriate attentional control over the action and therefore a wrong routine is activated. Based on Figure at the skill level, human performance is affected by the stored pattern of preprogrammed instructions [2]. Skill-based errors are related to unintended behavior, glide, and praise. This can happen with the "daily" behavior of the well-known settings.

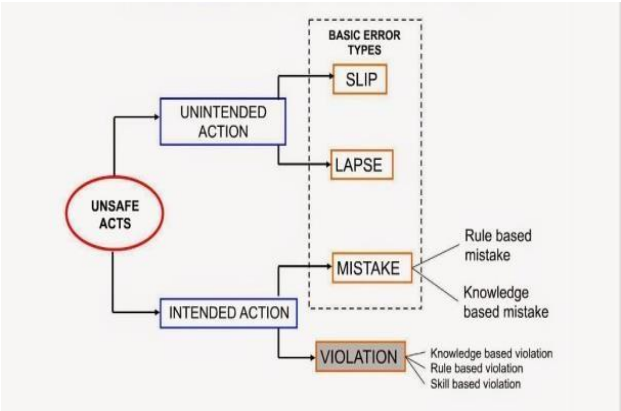

Fig. 1 The model of unsafe act

About one-third of the accident involved an absence slip and lapse.

Skill-based performance requires little mental effort, and in general, there are few errors.

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The automatic nature of skills makes workers free to think about other things, but that cost is less likely to monitor what they are doing. As a result, missing slips and lapse are particularly dangerous. When the automatic skills are learned, it is very difficult to change it. However, this does not mean that hacks are not incorporated into work results. For example, Williamson and Feyer (1995) stated that the number of people in the workplace fatal labor accident in Australia. It is more likely to occur at night than during the day. The results of this study are consistently based on these findings, it shows that the accident rate per worker is the highest between 0200 and 0400. The most common form of dangerous behaviour is the third highest slip and lapse (specified in 45.0% of all cases), routine violation (43.0%), and mistake (30.8%). The most common workplace factors identified were the physical environment (39.6% of all accidents) and the behavioural environment (34.1%) [3].

ages of the 10 questions distributed which indicated the reliability of the questions.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.970	0.981	22

Fig. 2 Q2

III. METHODOLOGY

This questionnaire survey relates to human error in improving slip and lapse, and it is distributed to workers. Workers are divided into two categories, technicians, and engineers. The questionnaire is based on human error made by workers in basic maintenance. The questionnaire form contains answer questions and suggestion space to overcome this problem.

The data analysis will analyze by the statistical test (T-test) in SPSS software. The T-test is actually the procedure for hypothesis testing. There are several kinds of t-tests, but in this research, the "two-sample t-test" is used to analyze the data.

IV. ANALYSIS

The questionnaires are mainly answered with ratings. Those ratings are the point of the objectives, to gain more understanding about this survey towards the students who will go into the aviation industry.

Reliability analysis

In this study, the survey was conducted at Hammock Helicopter Company at Subang. The researcher decided to hold a simple pilot test to tests the correctness of the instructions to be measured by whether all the respondents in the pilot sample are enable to follow the directions as indicated. It also provides better information on whether the type of survey is effective in fulfilling the purpose of the study. The pilot test was conducted from the certain amount of population which consists of 38 respondents. A set of question was distributed to achieve the objective of research. The use of SPSS sampling in Figure 2 below shows that 0.970 percent Figure 2 – Reliability Statistics

Section B: Human Error Effect

1. Slip and Lapse error is a common things happen in aviation

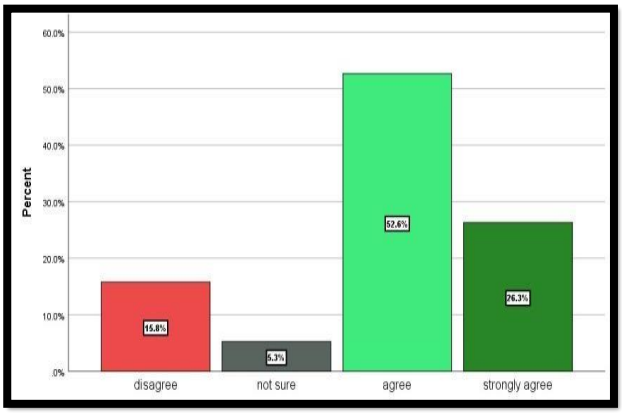

Fig. 3 Q1-1

Slip and lapse error is a common things happen in the aviation industry. From the bar chart showed in the Figure 3above, we can conclude that twenty out of thirty-eight (52.6%) respondents are agreeing with the statement. Ten (26.3%) respondents are confessing and strongly agree with the statement which state that the slip and lapse error are very common in the industry. While the respondents who are disagree with the statement only six (15.8%) and the neutral respondents are only two (5.3%).

2. Slip and Lapse error can give an impact to the respondents

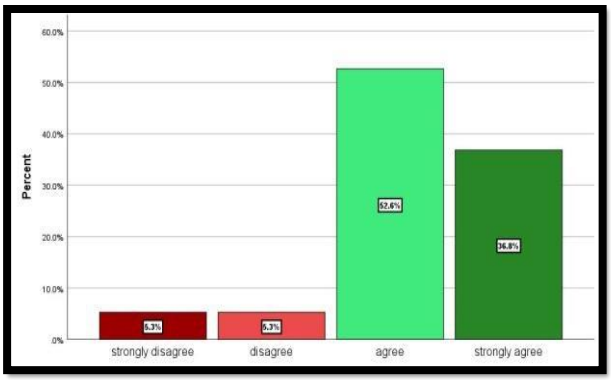

Fig. 4 Q2-1

From the Figure 4, twenty (52.6%) respondents are agreeing with the statement (slip and lapse error can give an impact to the respondents). Fourteen (36.8%) of them are strongly agree. While two (5.3%) respondents are disagreeing and the other 2 (5.3%) strongly disagree with the statement.

3. Less attention of respondents can cause accident happen

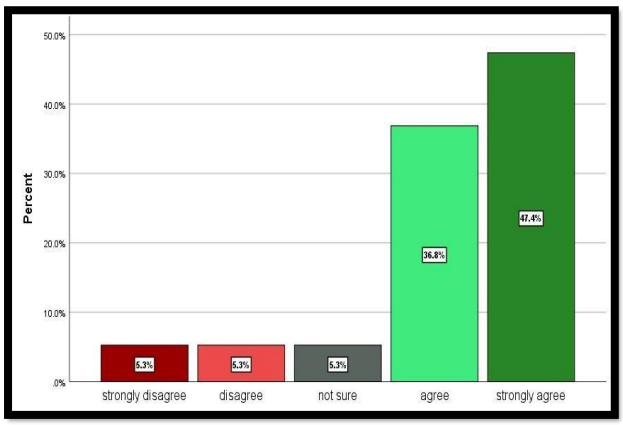

Fig. 5 Q3-1

Less attention of respondents can cause accident happen. From the Figure 5, it is showing that the most of the respondents are support the statement in the question 3. This is because eighteen (46.4%) respondents are strongly agreeing. While there are also fourteen (36.8%) respondents that are agree only. Thus a few respondents do not agree and some of them are neutral. Only two (5.3%) respondents for each scale vote for strongly agree, disagree and not sure.

4. Misplaced tools affect the respondents'/technicians' work

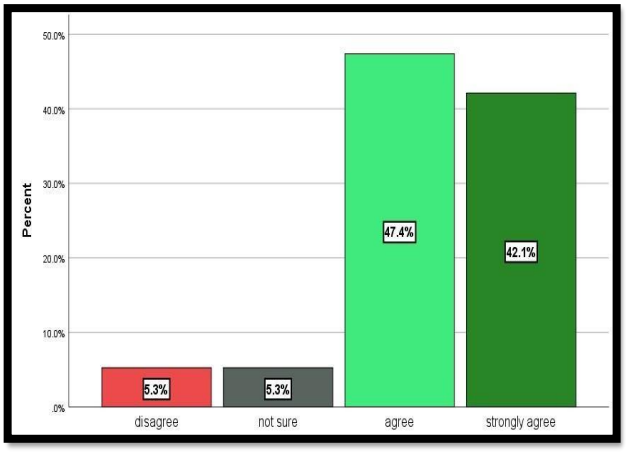

Fig. 6 Q4-1

For the statement "misplaced tools affect the respondents'/technicians' work", we can conclude based on the Figure 6 that majority of the respondents are agree. The highest is the agree respondents which have eighteen (47.4%) person while sixteen (42.1%) respondents are voting for strongly agree. Besides that, there are also two (5.3%) respondents which are not sure and also two (5.3%) respondents that are disagree with the statement Figure 25 shows the results for question 4, always ask other to do the job without follow up. The respondent's answer is most common in Disagree and Strongly Disagree column with 14 out of 42 respondents (33.3%) each choosing the answer. Third highest are Moderate with 12 out of 42 respondents (28.6%) followed by 2 respondents (4.8%) in Agree. Strongly Agree got no respondent choosing the answer. This shown that many respondents will always follows up the job that has been given to others.

5. Have less experience in doing maintenance can cause the error

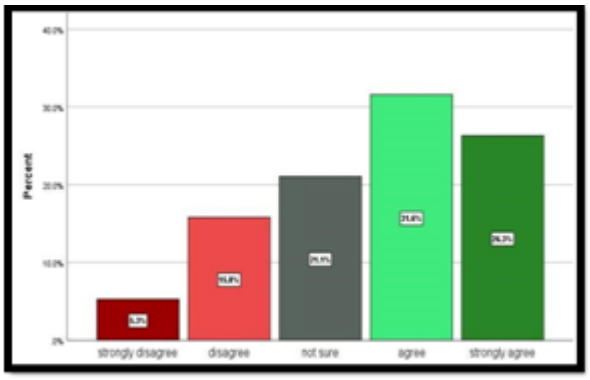

Fig. 7 Q5-1

Figure 7 shows the results for question 5, I always think about my personal matters at work. The respondent's answer is most common in Strongly Disagree column with 16 out of 42 respondents (38.1%) choosing the answer. The second highest is Disagree with 14 respondents (33.3%) followed by 8 respondents (19%) in Moderate and Agree with 4 respondents (9.5%). Meanwhile, Strongly Agree got no respondent choose the answer. Figure 26 shown that most of the respondents are very professional as they are not thinking of their personal matters at work.

Section C: The Way to Avoid Slip and Lapse

1. Make an updated checklist for every tasks

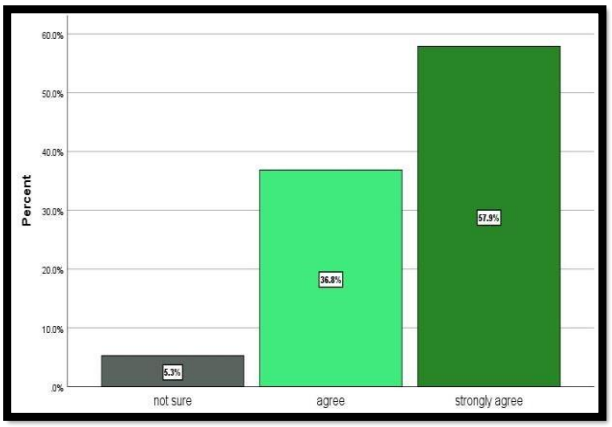

Fig. 8 Q1-2

Make an updated checklist for every task is one of the way to avoid the slip and lapse from happen in the industry. From Figure 8 the majority of the respondents are strongly agree with this way, which are twenty-two (57.9%) respondents are support. While the agree respondents also quite high, which are fourteen (36.4%) person. But there also two (5.3%) respondents that are not sure whether the way is effective or not.

2. Be professional by split the issue of family and work when at workplace

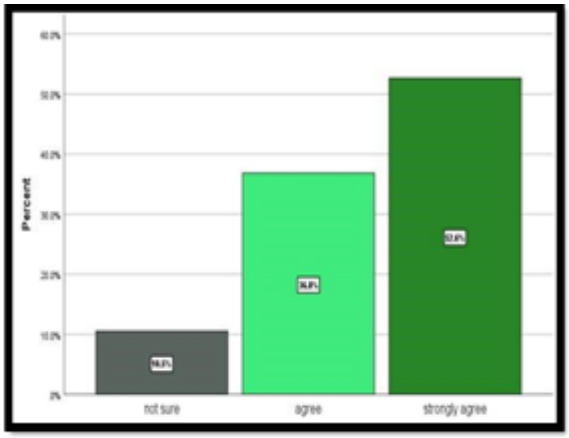

Fig. 9 Q2-2

Next way is when respondents be a professional by split the issue of family and work when at workplace. From the Figure 9, we can conclude that majority of the respondents are support this statement. Eighteen (52.6%) respondents are strongly agreeing with this statement and sixteen (36.8%) respondents are only agreeing with the statement. But a part of the respondents is not sure with this statement, which is only four (10.5%) person.

3. Standardized procedure can strengthen the correct sequences

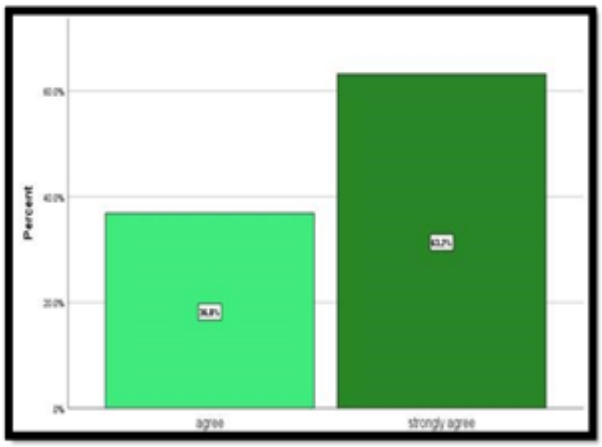

Fig. 10 Q3-2

Standardized procedure can strengthen the correct sequences is the way to reduce slip and lapse. From the Figure 10 above, we can conclude that all of the respondents are support this statement. Twenty-four (63.2%) of them are strongly agree with the statement. While another fourteen (36.8%) of them are only agree with it. Figure 30 shows the results for question 9, overconfidence causes negligence. The respondent's answer is most common on Agree with 18 out of 42 respondents (42.9%) choosing the answer. Second highest is Strongly Agree with 16 out of 42 respondents (38.1%), followed by Moderate with 8 respondents (19%). Lastly, Disagree and Strongly Disagree got no respondent choosing the answer. Hence, overconfidence while doing work can cause negligence to happen.

4. Unintentional error always happened by the workers

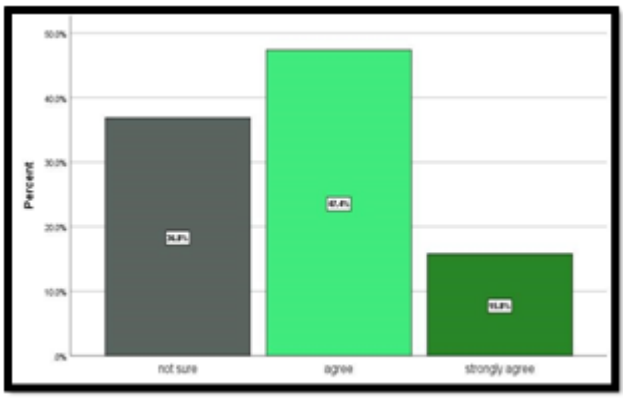

Fig. 11 Q4-2

Next way is unintentional error made by worker. From the Figure 11 above, we can conclude that the highest respondents are agree with this statement which are eighteen (47.4%) person. And six (36.8%) respondents are strongly agreeing with this. But fourteen (15.8%) respondents are not sure with the statement.

5. Plenty of leave from work can help in reducing error

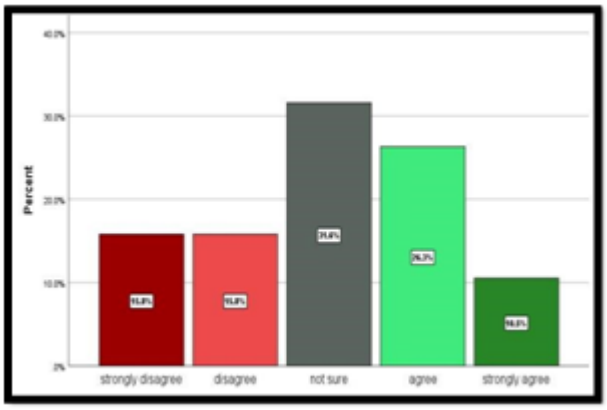

Fig. 12 Q5-2

Plenty of leave from work can help in reducing error is the way to reduce slip and lapse error. Figure 12 above shows that the majority of respondents are not sure with the statement which are twelve (31.6%) person vote for it. Ten (26.3%) respondents are agreeing and four (10.5%) respondents are strongly agreeing with the statement. While six (15.8%) respondents are disagreeing and other 6 (15.8%) respondents are disagreeing with the statement.

Summary

In the survey questionnaire, section B is about human error effect. Based on the Figure 3, majority of the respondents are agreeing with the statement compare to disagree. This is showed that majority of them are aware that the slip and lapse is common things happen in their workplace. The other respondents we can conclude that they did notice about what happen in their surroundings. In Figure 4, thirty-four out of thirty-eight respondents are agree that slip and lapse action can give impact to them as respondents.

But the other four respondents are denying the statement stated. For the Figure 5, we can conclude that most of the respondents are agree with the statement which state "less attention of respondents can cause the accident". This means that they are already know their responsibility to give fully attention and commitment for every task they are doing. Besides, in Figure 6 many of the respondents are agree that when someone are misplaced items or tools, their job will be affected and it may cause the disrupted of work happen. Figure 7 shows that twenty-two respondents out of thirty-eight are agree with the statement. The agree respondents'' maybe from the senior respondents which have more experience in the industry. While the deny respondents' maybe from the newbie respondents in the industry.

Section C in the survey questionnaire is about the way suggestion to avoid the slip and lapse. In Figure 8, most of the respondents are agree with the statement that state "make an updated checklist for every task". This is means that they are very dedicate with their works and will always make sure to update their jobs' checklist so that the miscommunication will be not happen in workplace. Figure 9 shows that the respondents are agree to be a professional when working is very effective to avoid error in the workplace. When it is time to work, then we must focus on it. Figure 10 showed that 100% of the respondents are agree with the ways of reduce the slip and lapse by standardizing the procedure and it can strengthen the correct sequences. All of them are Figure 11 shows that the respondents are not too agree with the statement. This is maybe because the workers are not doing the unintentional action even though they are fatigue or under pressure. In Figure 12, we can conclude that 30% of respondents are disagree, neutral and agree with the statement. The respondents' maybe workaholics person because one over three of their population are not prefer much about the plenty of free shifts can reduce errors.

V. CONCLUSION

From the questionnaire survey result, it seems like 90% of respondents are aware with the human error. Understanding of the human error can lead to understand better the cause of the human error and how to increase safety by looking at efficiency, knowledge, supervision, safety culture, environment, human factor and error. More specific guidelines or SOPs can be generated to address the possibilities of slip and lapse during research undertakings as UniKL MIAT is currently progressing from their recent researches [4-33] with the current ones. Alertness levels can be significantly improvised with updated guidelines to be used as main references during research work.

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