ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

EFFECTS OF REPORTING SAFETY CONCERNS ON AVIATION SAFETY IN THE GENERAL AVIATION INDUSTRY A CASE STUDY OF WILSON AIRPORT KENYA

Mathias Abuya Ombasa[1], John Karanja Ngugi[2]

[1] Business Administration, [2] School of Human Resource Development,
Jomo Kenyatta University of Science and Agriculture
Nairobi, KENYA.

ombasaa@yahoo.com

ABSTRACT

A study was conducted to determine the effect of safety occurrence reporting systems on aviation safety. The study focused on a sample of 39 respondents from the general aviation industry in Kenya in which they gave their perceptions on the effect of safety occurrence reporting on aviation safety at Wilson airport. The study analyzed whether or not there is a significant relationship between aviation safety and incident reporting of safety occurrences at Wilson airport. Data were collected via questionnaires from 39 respondents working at Wilson airport. The study utilized descriptive statistics, correlation and regression statistics to analyze the data. The findings of the survey show that there was a significant relationship between the level of implementation on reporting of safety occurrences (r=0.636) and organizational commitment on reporting systems (r=0.742). At 5% level of significance and 95% level of confidence, the researcher established that the level of implementation of reporting systems had significant level of 0.000, while organizational commitment on reporting systems had 0.088. These findings indicated that the organizational commitment on reporting systems was the most significant factor that affects aviation safety, followed by the level of implementation of reporting systems at Wilson airport.

The study focused on employees working at Wilson airport and how their organizations handled aviation safety occurrences. The results suggested an improvement on the level of implementation of reporting systems and organizational commitment on reporting systems, however there is need to further improve aviation safety. The results of the study have valuable implications for policy makers in the general aviation at Wilson airport.

Keywords: Organizational commitment on reporting of aviation safety concerns, level of implementation of reporting systems of safety concerns and aviation safety.

INTRODUCTION

A substantial body of evidence suggested that safety concerns could contribute to improving safety if diligently applied within the aviation industry. A number of aviation accidents suggest that the principles of reporting have not been embraced by the aviation industry; for example there is evidence that aviation incidents are not always reported even when reporting is mandated by law. This study seeks to uncover factors influencing individual intention to report safety concerns in the aviation and suggest better ways of improving the system for efficient and effective aviation safety.

According to the Ministry of Transport, Air Accident Investigation records, aircraft accidents have continued to increase despite Kenya Civil Aviation Authority having strengthened its safety oversight by recruitment, training, developing safety procedures and enforcement. A number of safety oversight program have also been conducted by US Federal Aviation

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

Administration (FAA) through its program Safe Sky for African initiative and World Bank to both the aviation regulator and the industry (Ministry of Transport 2013).

Kenya has experienced one of the worst air accidents in the recent years. Preventing accidents has remained a major challenge considering the number of air accidents in the last five years. On 10th June 2012 Kenya was plunged into mourning following the helicopter accident that killed two prominent Kenyan, security agents and the flight crew (Media Council of Kenya 2012). Similar accidents have been witnessed in Kenya before like the plane crash in 2008 at Kojong Hills in Narok (C, Bryson Hull and Wangui Kanina 2008).

LITERATURE REVIEW

Safety is the state in which the risk of harm to persons or property damage is reduced and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management. Safety improvement measures are introduced usually to address the identified safety concern. Due to the nature of the aviation industry, total elimination of accidents or serious incidents is unachievable. No human effort or human-made system can be free from risk and error, and failures will be expected to occur in spite of the most proficient prevention efforts. A number of aviation accidents suggest that the principle of reporting have not been embraced by the aviation industry: for example there is evidence that aviation incidents are not always reported even when reporting is mandated by law.

According to Feldman (1999) an employee has five initial choices when perceived with wrongdoing at work: to ignore, acquiesce, participate, object or walk away (these are not mutually exclusive over time). Dehn and Callard (2004) suggested four choices: silence, internal disclosure, external disclosure, or leaking the information anonymously. While Skopinker(2004) suggested three options :try to change the situation, mentally isolate yourself or resign. The multitude of opinion demonstrates that reporting issues and the approach to dealing with safety occurrences could be complex. One would argue that in a situation where safety concerns has clearly been communicated there should only be one option that of reporting safety concern to those who are in a position to rectify them. It could be said that reporting is beneficial to organization and society as a whole; however, it is important to expose the other face of reporting that is motivated by “bad” intentions some of which may lead to bad actions and bad consequences. Such reporters could be seeking financial rewards, revenge or even fame. When faced with a reporting event it is often hard for organizations to determine the true intentions of the reporter. This may explain why organizations sometimes retaliate against such actions. In the absence of internal support, reporters may be faced with no option but to disclose information externally through external reporting channels such as the media where they can be heard and get the attention they believe is required.

Encouraging internal reporting gives managers more control to the problem at hand and creates opportunities for organizations to deal with their own misconduct in an effective and responsible manner, hence precluding the need for external reporting and its resulting damage. Contrarily, many employees would disclose information externally if they have no confidence in management actions or believe their concerns will not be considered properly. For these reasons, organizations must be able to provide sufficient responses to internal reporting (Micel & Near 1994) and develop robust support systems through which employees would not hesitate to report their concerns.

In the US aviation safety reporting systems (ASRS) was introduced and instituted in 1976 to promote reporting of safety concerns throughout the pilot, cabin crew, and engineering

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

communities. They were intended to help prevent future decisions making problems (Wilford 1986). The system allows employees to complete and mail a form to the Batelle Memorial Institute in Ohio where a team of investigators investigate employees claim and forward an anonymous copy to the appropriate NASA officials. If concerns occur the day before a scheduled launch of a space shuttle then these can be communicated via telephone to a launch safety officer (ASR (US) 1976). In operating this system NASA makes an assumption that concerns sent by employees are received and dealt with appropriately.

PROBLEM STATEMENT

According to the Ministry of Transport, Air Accident Investigation records aircraft accidents have continued to increase despite Kenya Civil Aviation Authority having strengthened its safety oversight by recruitment, training, developing safety procedures and enforcement. A number of safety oversight program have also been conducted by US Federal Aviation Administration (FAA) through its program Safe Sky for African initiative and World Bank to both the aviation regulator and the industry (Ministry of Transport 2013). Kenya has experienced one of the worst air accidents in the recent years. Preventing accidents has remained a major challenge considering the number of air accidents in the last five years. On 10th June 2012 Kenya was plunged into mourning following the helicopter accident that killed two prominent Kenyan, security agents and the flight crew (Media Council of Kenya 2012). Similar accidents have been witnessed in Kenya before like the plane crash in 2008 at Kojong Hills in Narok (C, Bryson Hull and Wangui Kanina 2008). Due to this, there is a desire to conduct a study focusing on factors that influence aviation safety in the general aviation industry in Kenya. This study will investigate whether incident reporting of aviation safety occurrences affect aviation safety.

PURPOSE OF THE STUDY

The purpose of this study is to examine the relationship between reporting of aviation safety concerns and aviation safety in the general aviation industry in Kenya a case of Wilson airport. It is hoped that the findings of the study will provide empirical evidences in the aspects of to what extent is reporting of aviation safety concerns affects aviation safety in general aviation and fulfill the research gap due to lack of studies conducted among academicians on aviation safety. At the same time, the findings from this research will be useful to aviation stakeholders in Kenya in order to improve aviation safety.

RESEARCH QUESTIONS

The current study is thus conducted to address the following research questions:

1. Does the level of implementation of reporting on safety affect aviation safety?
2. Does organizational commitment on reporting of safety occurrences affect aviation safety?

METHODOLOGY

This study was carried out through a survey method using questionnaires as the main instrument. The sample consists of respondents among aviation personnel working at Wilson airport.

The conceptual framework for this current study was suggested in Figure 1 below:

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

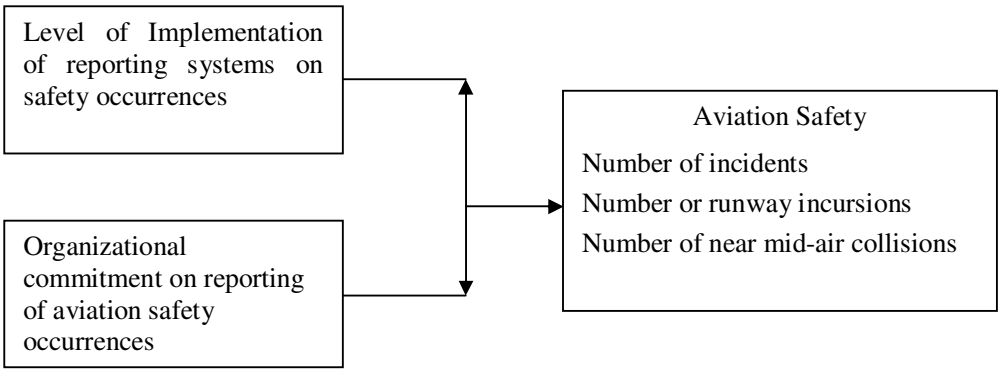


Figure 1. The conceptual framework for study

This conceptual framework explains that the level of implementation of safety reporting systems and organizational commitment on reporting of safety occurrences can affect aviation safety. The dependent variable in this research is aviation safety. Aviation safety can be defined through the strength of organization's participation and involvement, in safety activities. The independent variables are organization's commitment on safety and the level of implementation of safety reporting schemes.

The questionnaires consisted of four parts to measure the studied elements, where the independent variables are the organizations commitment on reporting safety concerns and the perceived level of implementation of safety reporting schemes. The dependent variable had three subscales namely the number of incidents, number of runway incursions and number of mid-air collisions.

The method used to measure level of implementation is a close-ended research questionnaire in which employees are asked to answer yes or no to five different questions trying to find the level of implementation of safety concerns. A five-likert scale is used to measure organizations commitment to reporting of safety concerns and the status of aviation safety. Details of the scale was 1=strongly disagree, 2=disagree, 3=uncertain, 4=agree and 5=strongly agree.

The internal consistencies of scale were assessed through computing Cronbach's Alpha. The components of factor affecting aviation safety show the reliability value ranging from 0.6 to 0.9. Implication from these values indicates that all of the items used for each component in the questionnaire have a high and consistent reliability values.

The study was guided by the following hypothesis:-

H1: There is significant contribution from the level of implementation of confidential systems towards aviation safety.

H2: There is significant contribution from organizational commitment on reporting systems towards aviation safety

H3: The level of implementation of confidential reporting system and organizational commitment on reporting systems was the significant predictors of perceived aviation safety.

FINDINGS

Table 1. Reliability statistics

No. of Items	*Cronbach's Alpha Based on Standardized Items*
3	0.832

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

According to Table 4.1 above, SPSS 16.0 program was used as a tool for this analysis to test the reliability of the scale. Cronbah's alpha in the order of 0.832 is very good enough and therefore implies that the instruments were sufficiently reliable for measurement.

Table 2. Whether the organization have a confidential incident reporting system

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Yes	32	82.1	82.1	82.1
	No	7	17.9	17.9	100.0
	Total	39	100.0	100.0	

Table 3. Rating on whether employees are encouraged and rewarded for providing essential safety-related information

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Strongly Disagree	1	2.6	2.6	2.6
	Disagree	9	23.1	23.1	25.6
	Uncertain	15	38.5	38.5	64.1
	Agree	13	33.3	33.3	97.4
	Strongly Agree	1	2.6	2.6	100.0
	Total	39	100.0	100.0	

Table 4. Best aviation safety record

		Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	Disagree	8	20.5	20.5	20.5
	Neutral	19	48.7	48.7	69.2
	Agree	11	28.2	28.2	97.4
	Strongly agree	1	2.6	2.6	100.0
	Total	39	100.0	100.0	

Table 5. Pearson Correlation coefficients

		Whether organization Have confidential system Reporting	*Employees are encouraged and rewarded for providing safety information*
Best Aviation Record	*Correlations*	0.636	0.742
	Sig.	0.000	0.000

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

Table 5 shows findings on Correlations calculated to determine to what extent level of implementation of confidential reporting system and organizational commitment correlated with aviation safety. Results in Table 5 indicated significant positive correlations ($p < .05$) were formed for all two variables. Results revealed that the level of implementation of confidential reporting system and organizational commitment had significant positive relationships with aviation safety ($r = .636$, $p = .000$; and $r = .742$, $p = .000$, respectively). Therefore, Hypothesis 1-2 was confirmed. The correlation coefficient value gained from this analysis shows a solid relationship between the variables (Baharom Mohamad, 2004). The result from the correlation found in Table 5 fulfilled the required conditions for regression analysis.

Table 6. Model Summary of the Regression Analysis

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Change Statistics*				
					R Square Change	*F Change*	*df1*	*df2*	*Sig. F Change*
1	.765[a]	.586	.563	.44325	.586	25.459	2	36	.000

Predictors: (Constant), Rating on whether employees are encouraged and rewarded for providing essential safety-related information (organizational commitment), whether the organization have a confidential incident reporting system(level of implementation).

Regression equation of the model, **AvSaf = α + β1LIC + β2OC + e**

Where:

AvSaf = Aviation Safety

α = Intercept

LIC = level of implementation of confidential systems (Respondent opinion on a yes or no scale)

OC = Organizations commitment towards reporting systems (Respondent opinion on a 5 point scale)

e = Error

Predictors: (Constant), Rating on the level of implementation of confidential reporting systems and the rating on the extent employees are encouraged and rewarded for providing essential safety-related information,

Dependent Variable: Best aviation safety record

A value of 0.765, in this example, indicates a good level of prediction. The findings indicate that 58.6% of the variance in the dependent variable (best aviation safety record) is explained by the collection of the independent variables (Rating on the level of implementation of confidential reporting and organizational commitment on reporting systems). The Multiple R for the relationship between the set of independent variables and the dependent variable is 0.765, which would be characterized as strong using the rule of thumb

Table 7. ANOVA Analysis

	Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	Regression	10.004	2	5.002	25.459	.000[a]
	Residual	7.073	36	.196		
	Total	17.077	38			

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

The findings in Table 7 indicated that F= (2, 36) =25.459, p <0.05) thus confirming the regression model is a good fit of the data. The independent variable which was used in this research was a predictor of the dependent variable. Hypothesis H3 was therefore accepted.

Table 8. Coefficients analysis

	Unstandardized Coefficient		Standardized Coefficient		Sig@95%
Model	B	Std. Error	beta	t	
Constant	.672	.379	-	1.772	.085
LIC	.464	.265	.253	1.751	.088
OC	.516	.130	.573	3.968	.000

The equation (**AvSaf = α + β1LIC + β2OC + e**). Becomes; AvSaf= 0 .672 + (.464*LIC) + (.516*OC)

According to the regression equation established, taking all factors (the level of implementation of reporting systems and the organizational commitment on the organizational commitment on reporting systems) constant at zero, aviation safety will be at 0.672.

At 5% level of significance and 95% level of confidence, the researcher established that the level of implementation of reporting systems had significant level of 0.000, while organizational commitment to reporting systems had 0.088. These findings indicated that the organizational commitment on reporting systems was the most significant factor that affects aviation safety, followed by the level of implementation of reporting systems at Wilson airport.

DISCUSSIONS

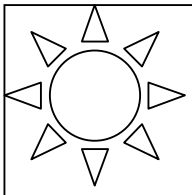
The first research question is about the relationship between the level of implementation of reporting systems and aviation safety which shows a positive and significant relationship with each other. During data analysis it was observed that the level implementation of reporting systems is 82.1% within the general aviation industry at Wilson airport. The study also revealed that a number of organizations at Wilson airport do not have reporting system on safety occurrences. Pearson's results revealed that the level of implementation had a positive correlation of 0.636 (a moderate correlation) which indicated that implementation affects aviation safety. The results from regression analysis further suggested that the level of implementation of reporting systems was statistically significant predictor of aviation safety.

The second research question was regarding the association between organizations commitment on reporting of reporting systems and aviation safety. During data analysis it was observed that majority of the respondents were not sure if their employers were seriously committed towards aviation safety or not. It was however noted that 33.3% of the respondents agreed that most organizations in Wilson airport were committed to safety reporting systems. Further analysis using Pearson's analysis indicated organizations commitment had a positive correlation of 0.742 which indicated that organizations commitment to reporting of safety concerns affected aviation safety. The results from regression analysis further suggested that organizational commitment was statistically significant predictor of aviation safety.

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

RECOMMENDATIONS

In practice, the importance of communicating safety concerns could be communicated to the aviation community through use of pamphlets, posters and newsletters. Indeed such simple cost effective has worked well in the health behavior. For example the use of posters has been found to significantly increase the rate of hand-washing in hospitals (Pittet et al.2002). Alternatively, organizations could introduce ''safety awareness weeks'' where examples such as that displayed in figure 9 could be distributed among existing staff such example may help increase awareness of their responsibility towards communicating safety concerns.



Have you seen something that got you concerned?
Are you wondering whether you should do something about it?
It is safer for everyone if you
Speak-up
Act
Follow-up
Endure

Secondly, it was identified that organizations commitment in reporting safety concerns as the most significant factors influencing aviation safety among organizations at Wilson airport. It was noted that organizations can improve their performance through by encouraging employees and even rewarded for providing safety-related information. The results of this investigation are quite beneficial for managers and policy makers. The managers can create reporting procedures which should be fairly implemented. The procedures must be simple and easy to follow. The managers need to recognize and reward employees who provide information safety concerns. Employee will give their maximum when they have a feeling or trust that their efforts will be rewarded by the management. There are many factors that affect employee performance like working conditions, worker and employer relationship, training and development opportunities, job security, and company's overall policies and procedures for rewarding employees, etc. Among all those factors which affect employee performance, motivation that comes with rewards is of utmost importance. Motivation is an accumulation of different processes which influence and direct our behavior to achieve some specific goal (Baron, 1983).

Thirdly, even though the level of implementation of reporting safety concerns at Wilson airport is well over 80 percent that should not imply that organizations are free from accidents. Each error may occur frequently without harmful results, but when combined (i.e., holes are lined up), accident occurs. The holes due to active failures are likely to be relatively short lived while those arising from latent conditions may lie dormant for many years until they are revealed by regulators, internal audits or by incidents and accidents. It is also important to recognize that, unlike the holes in Swiss cheese slices. These defense gaps are not static especially those due to active failures. They are in continuous flux, moving around and opening and shutting according to local circumstances. It is therefore important for all organization operating at operating at Wilson airport to embrace use of reporting systems (J.Reason 1998)

CONCLUSION

The aim of the study was to explore the impact of reporting of aviation safety concerns on the general industry at Wilson airport. Analysis has shown a close relationship between reporting of safety occurrences and aviation safety.

ISSN: 2186-845X ISSN: 2186-8441 Print
Vol. 3 No. 1, January 2014

In context of Wilson airport most employees think that there is a major appreciation across most organizations on reporting of safety concerns. It was however noted that there is quite a number of organizations who have not considered reporting of aviation safety concerns within their operations. These deficiencies can be worked out if the chief executives recognize the importance of reporting systems by implementing and encouraging their employees to provide essential information to assist improve aviation safety. It is also suggested that employees be given training to learn importance of communicating safety concerns. This could be incorporated into general aviation training ethics as has been called for by other researchers (Oderman 2002)

In total, this study contributes to the limited body of knowledge underlying aviation safety within the general aviation industry. Besides, it justifies the importance of enhancing reporting of safety concerns among the general aviation industry at Wilson airport Kenya.

REFERENCES

[1] Baharom Mohamad (2004). *Persepsi Guru-Guru Terhadap Kepemimpinan Pengajaran Dalam Celik Komputer di Sekolah Negeri Johor*, PhD Thesis. Bangi: National University of Malaysia

[2] Baron, R. A. (1983*). Behavior in organizations* (p. 123). New York: Allyn & Bacon, Inc.

[3] Bryson, C. H. & Wangui, K. (2008). Reuters Breaking News.

[4] Dehn, G., and Callard, R. (2004). Whistle blowing the state of the art. *Public Concern at Work and Open Democracy Advice Center UK*, ISBN 1-919798-56-0. Online Available at: http://www.u4.no/recommended-reading/whistleblowing-the-state-of-the-art-the-role-of-the-individual-organisations-the-state-the-media-the-law-and-civil-society/downloadasset/2018

[5] Feldman (1999). Protection for whistle blowers. *Paper presented at the 9th International Anti-corruption conference Durban Australia*

[6] James, R, (1998). Achieving a safe culture. *Theory and Practice, 12*(3), 293-306, Manchester M13 9PL, UK.

[7] Media Council of Kenya (2012). Report on accidents tragedies; e Media Coverage of Police Helicopter Crash.

[8] Micel and Near (1994). Whistle blowing. Reaping the benefits. *The Academy of management executives, 8*(3), 65-72.

[9] Ministry of Transport (2013). *Air Accident Investigation*. Accident and Incident data records.

[10] Oderman, D. B. (2002). Ethics education in University aviation management programs in the US: Part one; the need for aviation institute. *Journal of Air Transporters, 8*(1), 15-36,

[11] Pittet, D., Hugonnet S., Herbarth S., Mouroua, P., Sauvan V., Tauveneau, S. & Perneger, T.V (2002). Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *Lancet, 14*(356), 1307-1312,

[12] Skopinker, M. (2004). Whistle while you work. *The financial time*.

[13] Wilford, J. N. (1986). America's future after the challenger. *New York Times Magazine*, p. 39.