

Systematic Management of Operational Risks: An Australian Study

by

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Abstract

This paper analyses the operational risk management (ORM) practices in Australia. It provides a new perspective on how to use national and international operational management system standards as basis for systematic management of operational risks. It proposes a framework and identifies the critical factors for effective use of an ORM system. The proposed framework could also be used as a model to research ORM system applications in other countries.

Keywords: Systematic Management, Operational Risks

1. Introduction

The implementation of one or more management systems is widely accepted as a proactive approach to managing risks and reducing losses in operations (Akpolat & Xu, 2002; Akpolat, 2004; Brumale & McDowall, 1999; Gardner & Winder, 1997; Raz & Hillson, 2005). There are numerous standards and guidelines available that can be adopted as basis for an ORM system. The ORM systems presently being used by Australian organisations can be divided into three main groups:

- ORM systems based on the risk management system standard AS/NZS 4360
- ORM systems based on the enterprise-wide risk management (ERM) frameworks
- ORM systems based on the management systems standards ISO 9001, ISO 14001, and AS/NZS 4801

In Australia, the approach outlined in the AS/NZS 4360 has been adopted by the federal, state and local government departments as well as by larger organisations including the Australian Stock Exchange, ANZ Banking Group, Australia Post, Qantas Airways, Telstra, BHP Billiton and Pioneer Australia (Commonwealth of Australia, 1996a and 1996b).

Almost parallel to the AS/NZS 4360, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed a robust framework called 'Enterprise Risk Management - Integrated Framework' (COSO, 2004). This framework is currently one of the commonly published risk management programs in Australia. Like the AS/NZS 4360 framework, the COSO ERM model is generic in nature and could be applied by all organisations, industries and sectors (Affisco et al., 1997; Kleffner et al., 2003; Sharman, 2002).

The idea of reducing losses caused by poor product/service quality through the implementation of a 'standardised' system is not new and can be expanded into other aspects of an

operation as well. In the past few years, many organisations in Australia and elsewhere implemented environmental and/or safety management systems in addition to their existing quality management system. Like the quality management system, environmental and safety management systems can be certified by a third party using the following standards: ISO 9001:2000 for the quality management system (QMS); ISO 14001:1996 for the environmental management system (EMS); and AS/NZS 4801:1996 for the occupational health and safety management system (OH&SMS). In Australia, there is an increasing trend to amalgamate the quality, environmental and safety management systems into a single integrated management system (Terziovski and Samson, 1999).

2. The Proposed ORM System Framework

In the past, various standards and frameworks have been used to manage operational risks. In fact, the implementation of one or more operations management systems is considered to be a proactive way to manage and reduce operational risks. In the field of operations management systems, QMS seems to be the most studied area. Based on this fact, it was decided to develop an ORM system framework consisting of three modules and seven elements. These are:

Module 1: Top management (Element 1: Leadership).

Module 2: Process management (Element 2: Planning and strategic alignment; Element 3: Implementation; Element 4; monitoring and continuous improvement)

Module 3: Human resource management (Element 5: Training and performance management; Element 6: Employee involvement and empowerment; Element 7: Communication)

3. Testing the ORM System Framework

A survey questionnaire was developed in order to test the research model. The questionnaire consisted of two main sections. In the first section, generic information, such as industry type, size of organisation, type of ORM systems application, etc., was obtained from responding organisations. In the second section of the survey, respondents were asked to rate their opinion in regards to the seven ORM system elements using a five-point Likert scale. These responses were obtained in two separate columns; the responses to ORM System Practices in their organisation, and their perceptual responses to ORM System Importance.

A pilot study was carried to ensure the feasibility of the questionnaire and to test reliability of the scales. In order to get valid representative samples for this study, a random sampling method was employed to select 450 organisations from JAS-ANZ database in conjunction with Kompas database. 29 surveys were returned due to refusal to participate or not received by the target respondents due to discrepancies of email addresses which reduced the sample to 421. A total of 136 valid responses were received from the targeted audience resulting in a response rate of 32.3 per cent which was considered to be reasonable and acceptable for this study. The results of the survey were analysed using the statistical package SPSS version 15. The surveyed seven elements of the ORM system consisted of several sub-items. Reliability analysis was performed to test the items of each ORM element separately. Cronbach's alpha values between 0.736 and 0.869 indicated satisfactory reliability for all factors.

4. Survey Results

4.1 Generic information about responding organisations

The breakdown of the respondents based on the size of the organisations is shown in Table 1 which demonstrates that ORM practices were not limited to size of an organisation. It was implemented by both large organisations and small and medium enterprises (SME).

Table 1 Size of Responding Organisations

Size of organisation	No. of respondent	Per cent (%)
Small (< 20 employees)	7	5.1
Medium (20 – 199 employees)	18	13.2
Large (> = 200 employees)	111	81.7
Total	136	100

Majority (89.7 per cent) of respondents were in non-manufacturing. Only 10.3 per cent were in manufacturing industry. This result corresponds with other Australia business statistics since majority of the Australian businesses operate in non-manufacturing field.

4.2 Use of management system standards and their integration

Figure 1 shows the use of various management system standards as a basis for ORM system practices in Australian organisations. ISO 9001 (quality management standard) seems the most favourable (72 per cent) standard, which is not surprising if we consider the fact that ISO 9001 is the most commonly implemented management system standard in Australia and in the world. While the standards AS/NZS 4360 (risk management standard) (59.2 per cent), ISO 14000 (environmental management standard) (58.4 per cent), and AS/NZS 4801 (occupational health and safety management standard) (58.4 per cent) were also used many organisations, the use of COSO (3.2 per cent) and the other standards (9.6 per cent) seem relatively negligible.

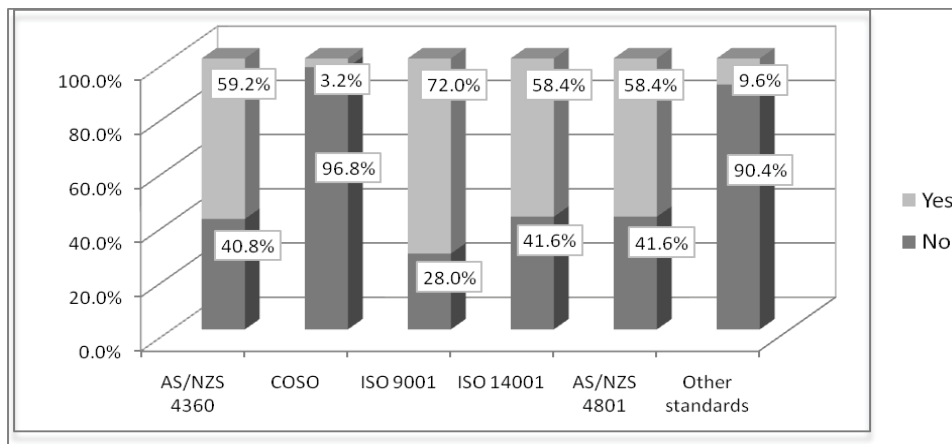


Figure 1 Use of Management System Standards as Basis for ORM Systems

As depicted in Figure 2, the integration of management system standards seems to be quite high in Australian organisations. If we consider all the different levels of integration, it becomes clear that a large number of respondents (94.1 per cent) use management system standards as an integrated approach rather than stand-alone. Also interesting that one third of respondents fully integrated their management system standards, while another third had achieved high level of integration. If we consider the three integration levels “low”, “medium” and “high”, it is also evident that a large number of organisations (61.8 per cent) are moving toward the amalgamation of their the management systems into a single integrated management system.

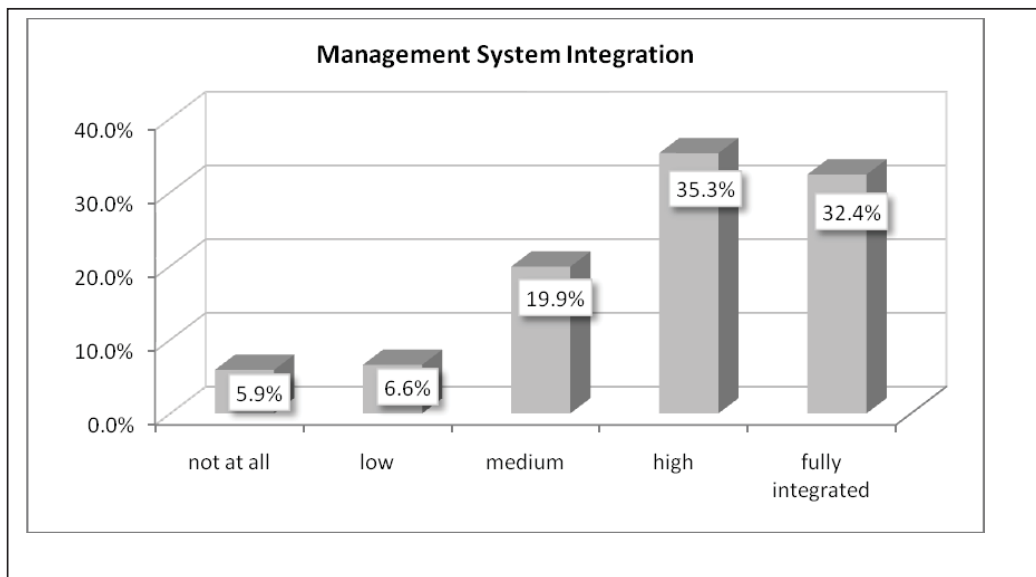


Figure 2 Management System Integration

4.3 Responses to ORM Practices in Australian organisations

The level of practice of ORM system elements was one of the key aspects of investigation. The practice level scale ranged from 1 to 5 (1 being the lowest and 5 the highest level of ORM practice). The overall mean, standard deviation and ranking of elements of practice levels as perceived by the respondents are shown in Table 2. These values range from 3.88 to 3.06 which correspond to the moderate level of practice of ORM system elements. Planning and Strategic Alignment was the highest ‘practice’ element followed by Implementation and Leadership, while Training and Performance Appraisal was perceived to be the lowest ‘practice’ element.

Table 2 Results of ORM Practices

Factor	Description	Mean	Std. Dev.	Ranking
F1	Leadership	3.53	1.15	3
F2	Planning and Strategic Alignment	3.88	1.01	1
F3	Implementation	3.56	1.05	2
F4	Monitoring and Continuous Improvement	3.37	1.13	4
F5	Training and Performance Appraisal	3.06	1.10	7
F6	Employee Involvement and Empowerment	3.24	1.16	6
F7	Communication	3.32	1.09	5

4.4 Responses to ORM Importance in Australian organisations

Table 3 shows the overall mean, standard deviation and ranking of the level of importance for each ORM element as perceived by respondents. The importance level scale ranged from 1 to 5 (1 being the least and 5 the highest importance level). The values range from 4.18 to 4.40 which fall between important and very important. Planning and Strategic Alignment, Communication, and Leadership were perceived to be the top three most ‘important’ elements, while Employee Involvement and Empowerment was found to be the least ‘important’ elements. However, there was only a small difference between the mean and standard deviations indicating that there is general agreement on the seven factors of ORM system.

Table 3 Results of ORM Importance

Factor	Description	Mean	Std. Dev.	Ranking
F1	Leadership	4.27	0.80	3
F2	Planning and Strategic Alignment	4.40	0.70	1
F3	Implementation	4.20	0.77	5
F4	Monitoring and Continuous Improvement	4.22	0.81	4
F5	Training and Performance Appraisal	4.20	0.84	5
F6	Employee Involvement and Empowerment	4.18	0.84	7
F7	Communication	4.34	0.75	2

5. Discussion

The following findings can be extracted from the discussions and analysis carried out in the previous sections:

(a) Implementation of an ORM system is not limited by the size or type of an organisation. Majority of the surveyed organisations had risk management policies and procedures in place. It appears there is an increasing trend of awareness of operational risks in Australian organisations.

(b) Managing operational risks based on management system standards appears to be a common practice. ISO 9001 (quality management standard) can be seen as the most favourable standard being used as a basis for ORM systems. Other preferred standards included the AS/NZS 4360 (risk management standard), the ISO 14000 (environmental management standard), and/or the

AS/NZS 4801 (occupational health and safety management standard). In addition, most of the surveyed organisations employed these standards as an integrated approach rather than stand-alone.

(c) Planning and strategic alignment factors scored as the highest in the perceptions responses to ORM practice. They were perceived to be the most critical factors among all the other factors. The analysis results also revealed that there was a difference between the means of perceived importance and levels of practice, indicating that the organisations have not performed the activities they perceived to be important for the ORM system. Despite the awareness of the importance factors, organisations seem to struggle with the successful implementation of those factors.

(d) The proposed seven factors in this study consisting of Leadership, Planning and strategic alignment, Implementation, Monitoring and continuous improvement, Training and performance appraisal, Employee involvement and empowerment, and Communication, were all found to be critical for a successful deployment of an ORM system and there was a strong interrelation among all factors.

6. Summary and Discussion

This study provided an extensive review of operations management literature and various standards and frameworks including AS/NZS 4360 (risk management standard), COSO ERM (enterprise-wide risk management framework), ISO 9001 (quality management system standard), ISO 14000 (environmental management system standard), and AS/NZS 4801 (occupational health and safety management system standard).

With the above contributions, this research establishes a foundation for ORM researchers to continue their future research on ORM system implementation. Although the proposed framework was based on the results of a study about ORM system implementation in Australia, the authors believe that due to its generic nature this framework can be used for study of ORM system implementations in other countries as well.

References

- Affisco, J. F., Nasri, F., Paknejad, M. J. (1997), "Environmental versus quality standards: an overview and comparison", *International Journal of Quality Science*, Vol. 2, No. 1, pp. 5-23.
- Akpolat, H., Xu, J. (2002), "Integrated Management systems: Quality, Environment and Safety", *The Asian Journal on Quality*, 3(1):85-90.
- Akpolat, H. (2004), *Six Sigma in Transactional and Service Environments*, Glower, UK.
- Brumale, S., McDowall, J. (1999), "Integrated management systems", *The Quality Magazine*, Vol. 8, No. 1, pp. 52-58.
- Commonwealth of Australia (1996a), *Guidelines for Managing Risk in the Australian Public Service*, MAB/MIAC Report 22, AGPS, Canberra.
- Commonwealth of Australia (1996b), *Managing Risk in Procurement - a Handbook*, AGPS, Canberra.

COSO (2004), *Enterprise risk management – Integrated framework*, New York.

Gardner, D. H., Winder, C. (1997), “Occupational health and safety management system”, *Quality Assurance*, 5(3): 183-196.

Kleffner, A. E., Lee, R. B., McGannon, B., 2003, “The effect of corporate governance on the use of enterprise risk management: evidence from Canada”, *Risk Management and Insurance Review* Vol. 16, No. 1, pp. 53-73.

Raz, T., Hillson, D. (2005), “A comparative Review of Risk Management Standards”, *Risk Management: An International Journal*, Vol. 7, No. 4, pp. 53-66.

Sharman, R., 2002, “Enterprise Risk Management - the KPMG approach”, *The British Journal of Administrative Management*, May/June 31, pp. 26.

Terziovski, M., Samson, D. (1999). “The link between total quality management practice and organisational performance”, *International Journal of Quality & Reliability Management*, 16(3): 226-237.