The Implementation of Risk Management in the Internal Audit Planning in the Ministry of Energy and Mineral Resources

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Abstract: *The role of internal auditor is currently moving, from its form of such traditional audit approach into the proactive approach by using the risk- based internal audit. In many researches, the implementation of risk- based internal audit may assist the internal auditor to perform more effective and efficient audit process. Within this paper, the risk management system and its implementation developed in order to generates the effective and efficient risk- based internal audit. The research methodology involved literature review, questioner, group discussion and benchmarking, for the purpose of observing the inherent risk on the examined object, while the Analytical Hierarchy Process (AHP) was used to obtain risk level and subject observed in the internal auditor's perspective. From engaging the risk- based internal audit planning within this research, the result showed an efficient working day which may be used to carry out the additional duties which have not been scheduled before to create such added- value through consulting and evaluating.*

Keywords: *risk management, internal audit planning, risk-based audit planning, analytical hierarchy process (AHP)*

1. Introduction

For supporting the realization of the objective of the Ministry of Energy and Mineral Resources (MEMR) in achieving the national sustainable development goals in energy sector, accordingly the role of internal audit is literally required in order to assist the organization in achieving this objective. The internal audit is forced to meet the requirements upon the good organizational governance, which combining both the effective risk management need and reliable control [1]. As one of the organizational function, the internal audit unit is faced to the resources limitation, which includes the time limit and budget limit, hence such risk- based planning with reliable ability to evaluate the risk is critically required, asides from its role in improving the effectiveness of audit and risk management system [2]. Departing from these backgrounds, a research on the audit planning by using the risk management approach was done, in which the internal audit was able to facilitate the implementation process of risk management, such as by initially developing the risk management system by using 31000:2009 ISO framework. The output resulted from the implementation of this risk management such as the risk map and inherent risk score which then was used as one of the factors of risk assessment. The implementation process of the risk management which was still in the promotional phase with the low maturity level had led into the necessity against the risk assessment from the internal auditor's perspective in order to ascertain that the auditable risk level of such unit is appropriately measured.

The said risk factors were later measured for each ranking by using the Analytic Hierarchy Process (AHP). AHP was chosen in the determination of the audit priority rank, since this technique is based on the utmost systematic basis and suitable for the evaluation of qualitative attributes and also calculates the validity ranging to the inconsistent tolerance limit of various criteria and alternative taken by the decision maker [3]. This AHP method has been widely engaged in ranking the risk level for the importance of audit planning, such as by Patton et al. [4], Kruger and Hatting [5], Miltz et

al. [6], Hamid [7], Deshmukh and Millet [8] and Zacharias [9].

2. Research Methodology

This research was conducted at the Directorate General of New Energy, Renewable and Energy Conservation, Directorate General of Electricity and Secretary of the National Energy Board in the Ministry of Energy and Mineral Resources. This research used both the primary data and secondary data in form of qualitative and quantitative data. The primary data was generated through the questioner, focus group discussion, and brainstorming towards the respondents which were selected through the purposive sampling method. The secondary data itself was generated through the collection of the existing data in the organization internally, including the vision and mission, strategic planning, organizational structure, and work plan as well as budget plan.

3. Implementation of the Risk Management

The implementation of risk management covers the scope of risk management process by using the ISO 31000 framework through communication and consultation, establishing the context, risk assessment, risk treatment, and monitoring and review [10]. In these research the entire scopes of risk management process had passed the process of focus group discussion and benchmarking before to be reflected in the Draft of the Policy Guideline for the Implementation of Organizational Risk Management in the Ministry of Energy and Mineral Resources. In supporting the risk assessment process, a risk criteria and scale of risk are determined to provide the common reference in conducting the evaluation. Scale of risk as shown on Figure 1 presents a 5x5 scale matrix which is called as the risk mapping. A risk mapping is created according to the tolerance level of such organization against the risk acceptability ratio of each activity run by the organization. Any risk plotted on the risk mapping will be ranked according to the score obtained by multiplying the

probability (1 to 5) with the impact level (1 to 5). The additional attributes, such as VL (Very Low) shows the lowest risk level, L (Low) shows the low risk level, M (Medium) shows the moderate risk level, H (High) shows the higher risk level, and VH (Very High) shows the most critical risk level.

Risk Analysis Matrix			Impact				
			1	2	3	4	5
			Not Significant	Minor	Moderate	Significant	Very Significant
Likelihood	5	Very likely	5M	10H	15H	20VH	25VH
	4	Likely	4M	8M	12H	16H	20VH
	3	Moderate	3L	6M	9M	12H	15H
	2	Unlikely	2L	4L	6M	8M	10H
	1	Rare	1VL	2L	3L	4M	5M

Unacceptable	*Undesirable*	*Acceptable*	*Negligible*

Figure 1: Risk Level Matrix of the Ministry of Energy and Mineral Resources.

In order to obtain the total score of the existing risks on each audit unit, accordingly the risk level would be multiplied to 5 for VH level, 4 for H level, 3 for M level, 2 for L level and 1 for VL level, furthermore all scores would be accumulated. From each total score owned by the unit, a grouped distribution ranges conducted to determine risk level on each audit unit. This risk level will reflect the inherent risk level on each audit unit which may become the reference in the audit planning.

Table 1: The Auditable Unit Risk Score

Auditable Unit	Budgets (IDR in million)	Score IR	Score (0-10)	Ranking IR
AU1	108.732	915	3,35	H
AU2	20.590	546	1,59	M
AU3	22.687	710	2,37	H
AU4	25.629	452	1,14	M
AU5	130.269	1270	5,04	VH
AU6	85.808	807	2,83	H
AU7	99.900	402	0,90	L
AU8	48.202	713	2,38	H
AU9	36.226	1444	5,86	VH
AU10	49.726	411	0,95	L
AU11	881.824	2313	10,00	VH
AU12	214.110	1564	6,44	VH
AU13	14.788	491	1,33	M
AU14	5.319	397	0,88	L
AU15	15.321	417	0,98	L
AU16	3.297	509	1,41	M
AU17	3.485	509	1,41	M
AU18	2.464	306	0,45	VL
AU19	418	460	1,18	M
AU20	3.762	478	1,27	M
AU21	329	408	0,93	L
AU22	390	212	0,00	VL
AU23	1.034	232	0,10	VL
AU24	450	212	0,00	VL
AU25	399	433	1,05	M
AU26	4.018	807	2,83	H
AU27	259	413	0,96	L

The results of risk assessment on all audit units (Table 1) show that each unit has the risk score that varies depending on the activities carried out. The more complex an activity, thus the more risk statements will be generated and the higher total risk score resulted.

Risk- Based Audit Planning

The audit planning stage was started by conducted the risk-self assessment, which is the risk assessment process of the auditable unit from the internal auditor's perspective. The Risk- Self Assessment is intended to determine the risk ranking of each auditable unit by using the risk factor. The Risk Factor comprises of the internal and external factors having an ability to improve the probability of the emergence of such risk or the impact of such risk [11]. For the same factor, the audit object may have different risk level. One of the examples of the risk factor is the degree of financial materiality. According to this level, the higher amount of budget or asset owned by one unit, the higher risk it has.

According to the results of the literature study, survey and brainstorming, there were 5 determined factors which were suitable for carrying out the self- assessment, such as the complexity of activities (CA), control environment (CE), fraud potential (FP), degree of financial materiality (FM), and the inherent risk (IR), which later would be used for the scoring or weighting by using the AHP method. This weighting/ scoring was done to the 27 auditable units through the paired comparison for each criteria of the predetermined risk factor. For the criteria of the inherent risk (IR), the expert respondent conducted a comparison by referring to the inherent risk score of auditable units. The weighting results obtained through the AHP method are shown on the Figure 2.

The assessment results of risk ranking on Figure 2 are classified according to the distribution ranges as listed in the Table 2, in which the weighting range of the risk assessment results is used to point out the risk significant ratio which may occur on each unit, in addition to determine the criteria of the total number of team in the assignment. According to Table 2, it can be explained that for the risk group within the range of 0.00900 - 0.02220 (Very Low group/ VL group) needs 3 auditors, therefore there will be 3 auditors comprising of the senior auditor, lead auditor, and team member within one team. The higher the risk significant ratio is, accordingly the more numbers of team member in need.

Table 2: The Weighting Result of the Alternative Distribution of Team Member

Range	Group	Number of Auditor
0,00900 - 0,02220	VL	3
0,02221 - 0,03540	L	4
0,03541 - 0,04860	M	5
0,04861 - 0,06180	H	6
0,06181 - 0,07600	VH	7

Figure 2: The Weighting Result of the Auditable Unit through the AHP method

Total audit days were determined according to the examination types categorized into 5 categories of the auditable unit, such as the Operational Audit (AU1-AU15) with 20 working days, Review upon the Arrangement of Financial Statements (AU16- AU18) with 10 working days, Review on the Arrangement of Ministry Work Plan and Budget Plan (AU19-AU21) with 10 working days, Evaluation of the Arrangement of the Governmental Institution Performance Accountability Report (AU22-AU24) with 5 working days, and the Audit of the Procurement Service Unit (AU25-AU27) with 10 working days.

To compare whether the risk- based audit planning was able to provide the more efficient and effective audit plan, thus the comparison between the risk- based audit planning and non-risk- based audit planning was conducted as reflected in Table 3.

Table 3: The Comparison between the Risk- Based Audit Planning and Non- Risk- Based Audit Planning

AU	Risk-Based					Non- Risk- Based		
	Weight	Cat.	ND	NA	WD	ND	NA	WD
AU1	0,051	H	20	6	120	25	7	175
AU2	0,047	M	20	5	100	25	5	125
AU3	0,047	M	20	5	100	20	5	100
AU4	0,041	M	20	5	100	20	5	100
AU5	0,062	VH	20	7	140	25	7	175
AU6	0,049	H	20	6	120	25	5	125
AU7	0,049	H	20	6	120	25	7	175
AU8	0,051	H	20	6	120	25	6	150
AU9	0,049	H	20	6	120	25	5	125
AU10	0,053	H	20	6	120	25	5	125
AU11	0,067	VH	20	7	140	25	6	150
AU12	0,075	VH	20	7	140	25	7	175
AU13	0,032	L	20	4	80	10	5	50
AU14	0,029	L	20	4	80	10	5	50
AU15	0,032	L	20	4	80	10	5	50
AU16	0,024	L	10	4	40	15	4	60
AU17	0,033	L	10	4	40	15	4	60

AU	Risk-Based					Non- Risk- Based		
	Weight	Cat.	ND	NA	WD	ND	NA	WD
AU18	0,014	VL	10	3	30	15	4	60
AU19	0,046	M	10	5	50	20	6	120
AU20	0,033	L	10	4	40	20	6	120
AU21	0,009	VL	10	3	30	20	6	120
AU22	0,013	VL	5	3	15	10	4	40
AU23	0,024	L	5	4	20	10	4	40
AU24	0,009	VL	5	3	15	10	4	40
AU25	0,019	VL	10	3	30	20	5	100
AU26	0,033	L	10	4	40	20	5	100
AU27	0,009	VL	10	3	30	15	5	75
Total			405	127	2060	510	142	2785

Note: AU (auditable unit), Cat. (category), ND (number of working day), and NA (number of auditor)

According to the above comparison table, it can be concluded that in the non- risk- based audit planning, the planning itself is prepared according to the amount of budget and the technical significant of such activity owned by the audited unit. The higher the budget has and the more technically complex of such activity, therefore the more number of auditor and working days will be required. It can be seen on the auditable unit of AU1, AU5, AU7, and AU12 with its higher budgets, these units can obtain more resources allocation, in which each of the units comprises of 175 working days. While in the risk- based audit planning, the auditable unit AU5 and AU12 receives 140 working days respectively and the auditable unit AU1 and AU7 receives 120 working days respectively. This different occurs as the impact of the implementation of risk weighting within the risk- based audit planning, in which those four auditable units vary in the risk ranking.

Time Allocation for the Unplanned and Unbudgeted Activity
According to the Table 3, it can be seen that there is an efficiency of working days of 26.03% (a decrease in the working days from 2,785 to 2,060 working days). The remaining working days can be allocated for the activity of

consultation or supervision, deskwork evaluation, and capacity development of the auditor as the additional activities by utilizing the remaining budget through the implementation of efficiency.

As the general guideline, to achieve the audit scope equalization on all auditable units, in which there is the additional activity or decreased budget which cannot be accommodated, accordingly the Internal Audit can use this following formulation: VH+H+M+1/2L+1/2VL in which the auditable unit with the alternative weight in the VH, H, and M groups will be annually audited and the auditable unit with the alternative weight in the L and VL groups will be audited once in the two years. This general guideline may only be implemented on the Operational Audit type (AU1-AU15) by remaining to consider the last audit period on the respective unit.

4. Conclusion

The risk assessment by using the AHP method on 27 auditable units results in three auditable units which may be categorized as having the very high risk level (VH), six auditable units categorized into the higher risk level (H), four auditable units categorized into Medium risk level (M), eight auditable units categorized into the low risk level (L), and six auditable units categorized into the very low risk level (VL).

According to the results of the risk- based audit planning, there is an efficiency of working days of 26.03% (a decrease in the working days from 2,785 to 2,060 working days) which can be allocated for carrying out the additional works which has not been scheduled in advance.

In the event of abnormal condition, in which such decreased budget or unscheduled additional work occur, therefore in order to achieve the equal scope coverage of the audit planning on all risk groups, the Internal Audit may use this formula: VH+H+M+1/2L+1/2VL in which the auditable unit with the alternative weight in the VH, H, and M groups will be annually audited and the auditable unit with the alternative weight in the L and VL groups will be audited once in the two years. However, this general guideline may only be implemented on the Operational Audit type (AU1-AU15).

5. Suggestion

1. The determination of the impact criteria and probability criteria is required as it refers to the internal condition of the Ministry of Energy and Mineral Resources, in which its business process differs from the other Ministries.
2. If the risk management has been implemented on the organization, it is expected for the availability of risk management (risk maturity) which later will be used for the risk- based audit planning.

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