

Design of Operational Risk Measurement in Consumer Finance Companies used Risk Breakdown Structure (RBS) and Analytic Network Process (ANP) Methods

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Abstract

This study examined a model of operational risk measurement design using ANP as a tool in determining the risk criteria weight on consumer finance companies. Identification of operational risk using the Risk Breakdown Structure (RBS) showed there were 21 risk group and 569 items of operational risk from the existing 12 departments at the operational branch of PT ABC. Risks are then transformed by referring Basell II Committee with seven loss event categories with 21 groups of risk. With expert respondents, ANP results showed that the risk of system failure and business disruption is the highest risk group compared to other risk categories. Model management handling strategies adopted four model risk management handling strategies that is risk acceptance, risk avoidance, risk sharing / transfer, and risk mitigation depend on the needs and conditions in the field and the level of frequency and impact. The pattern of controlling and monitoring strategies applies two models namely On Going Monitoring that the insurer responsibilities inherent in the PIC operation. And another is: Separate Monitoring (Monitoring by Third Party: Internal Audit or External Audit) in the three groups, namely: Self Compliance / Assessment, Internal Audit and External Audit.

Keywords

Risk operational, ANP, RBS, consumer finance

1. Introduction

Companies engaged in the field of services, especially retail financing is a company dealing with a fairly high level of risk, especially at the operational scale of the company. The growth of both network operational scale, accounts, and HR at the company's consumer finance (consumer finance) that the higher the potential operational risks that pose the greater. Wider network, growth of the account that the greater, and limitation of the number and competence of HR results in a weak operational controls. This opens up opportunities for abuse (fraud), the failure of information technology systems, standard operating processes that have not been in accordance with the rules / regulations that apply, and external parties to corporate crime that directly or indirectly impact the loss of material and non material to the company.

Consumer finance (54.5%) and leasing (32.5%) is a type of business that still dominate the industry. With high growth rates both in terms of financing and asset value, will certainly spur on the level of competition in this industry are higher. Market network, product variety, human resources, information technology and services are those items that were developed to reach a larger market. Surely this is an effect on increasing the potential for emerging risks. In addition to credit risk, liquidity risk, and reputational risk, it is certainly also a major trigger of operational risk with increasing problems of operational processes that run on different branches of the company. Then the effectiveness and efficiency of operations is of major concern. To that end, the role of risk management is critical in identifying, analyzing, and designing a handling system and a model of operational risks which may arise in the consumer finance company operations.

According to the Association of Certified Fraud Examiner (1993) in the United States that the level of losses caused by weak internal controls (compliance / audit) reached 30% of business failures (business failure). Being in 2010, ACFE released that in general the company lost 5% of their revenue due to weak internal control (lack of internal controls). In Indonesia, especially consumer finance companies, are generally still not open enough to publish the result of weak internal controls. Based on the release of ACFE, October 2010, showed that the lack of internal controls (Lack of Internal Controls) is a dominant factor reached 37.8%. Moderate override of existing internal controls subsequent ranks for 19.02%. And the next 17.9% due to lack of management review.

This study uses a Risk Breakdown Structure (RBS) method to identify risks and multi-criteria decision making to determine the weighting for each risk criteria and to calculate the value of risk in each sub-criterion. RBS consists of two stages of the development phase and implementation phase. Development stage includes the preparation of the hierarchy based on organizational structure or structures existing project, or based on past experience. The results of RBS in the first phase of development will serve as a source of information at a later stage to the process of risk identification, risk analysis, and reporting risks. Overall, RBS is similar to the application of taxonomy development risks, only refers more to the existing organizational structure. Then classify the list of identification based on the Bank of International Settlements (BIS, 2004) into four clusters of human factors, processes, systems, and external as well as into the seven loss event type categories. Measurement of the level of risk weighting was done by using a questionnaire to assess the possibility (likelihood) of risk occurrence and impact (severity) posed as well as pair comparison using the ANP method to determine the highest risk will be mitigated. The use of ANP method is based on a hierarchical structure in nature has a dependency between one element to another. In addition the use of AHP / ANP on banking and financing sector is still relatively little that is not more than 3% of total new applications developed intense after 2000. Methodology developed by Li, Chun Hao; Sun, Yong-he; Du, Yuan Wei. (2008), ANP (Analytic Network Process) as a tool to measure the risk that this tool is quite comprehensive in the calculation of risk types and can handle the dependency relationship in a set of elements. Where in this study between the elements and the other one addicted to each other. ANP is useful in making complex decisions involving the analysis of dependence and feedback within the context of benefits, opportunity, costs, and risks (Saaty, 2008).

The study is expected to provide benefits to operational suppression loss, reduce the cost of compliance / auditing, able to detect early deviations activities, and reduce the potential risks that could arise in times to come.

2. Methods

2.1. Consumer Finance

Non-bank financial institution which is the funding agency is more flexible and moderate than the bank which in certain cases even higher level of risk. This institution later known as the financial institutions that offer models of new formulations in terms of channeling funds to those who need it such as, leasing (leasing), factoring (factoring), venture capital, securities trading, business credit cards and consumer financing is governed by Presidential Decree No. 61 of 1988 on Financing Institutions. Definition of non-bank financial institutions can be seen in section 1 number (4) Presidential Decree. 61, 1988 on Financing Institutions, namely: "Non-bank financial institutions are business entities that conduct activities in financial management which directly or indirectly raise funds by issuing securities and channeled into the community to finance investments in companies".

Consumer finance or known by the consumer finance is one of the alternative financing systems quite an active role in supporting the business world in recent decades. Under section 1 number (6) Presidential Decree. 61 of 1988 on Financing Institutions, consumer finance companies is, "The business of financing the procurement of goods to consumers' needs with a system of periodic payments". Consumer Finance (Consumer Finance) is financing activities for the procurement of goods based on the needs of consumers with payment in installments.

In recent developments, the type of consumer financing are relatively quite young age but is quite popular in the business world in Indonesia, given the nature of consumer financing transactions are able to accommodate the problems that are not easily solved with the usual type of financing at banks. On the other side of the level of a given cost per customer is relatively small, considering the items in this category are in financing consumer goods consumer needs that will be used by consumers for the purpose of his life.

Consumer financing mechanisms to finance companies with a group of business with suppliers described in Figure 1 below.

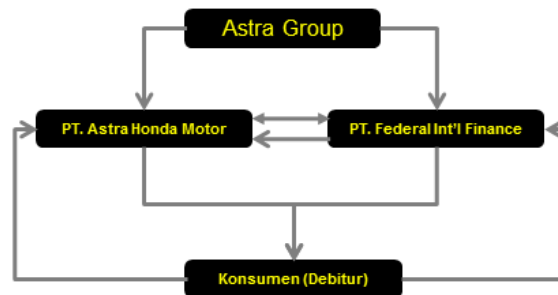


Figure 1. Consumer Finance Mechanism

In corporate banking and financial institutions, operational risk set out in the Basel Capital Accord. Where in 2001, the BCBS issued a proposal known as the New Basel Capital Accord or Basel II, which contains recommendations for managing credit risk, market and operational in the capital account should be allocated to ensure the bank can still operate in the event of irregularities. Basel II regulations will require many changes in banking institutions. Previous methodology for calculating capital of only using a quantitative approach and mechanical. While the new approach is more risk sensitive because in addition to credit risk and market risk, operational risk measurement are also included.

According to the Basel II Capital Accord, operational risk is the loss arising whether directly or indirectly because of failure or insufficient internal processes, people and systems, and due to external events. It added that operational risk includes four main categories namely people, processes, systems, and external factors. This risk can affect all people at all organizational lines.

2.2. Risk Methodology

Risk is the uncertainty about future events. Being on Big Indonesian Dictionary, defined risk as a result of less favorable (adverse, harm) of an act or acts. Moderate Australian Standard / New Zealand Standard 4360 2004 defines risk as the possibility of something that has an impact on objectives that are measured in terms of consequences and probability. The definitions above give information that the risks associated with the possibility of bad consequences (losses) of unwanted or unexpected. In other words "possibility" that have shown the existence of uncertainty. Uncertainty is a condition that causes the growth of risk. And if studied further "conditions of uncertainty" that arises due to various reasons, among others; interval starts planning, the limitations of the information required, limited knowledge of decision makers and so on.

Operational risks include five things: the failure of the company's internal processes, human resource error, system failures, losses due to events from outside the company, and losses due to violations of regulations and laws. Operational risk losses occur not only in financial institutions and non-bank banks, but also occurs in industrial firms, trade, mining, and all companies in other economic sectors.

For the purposes of classification of operational losses, the Bank of International Settlement (2004) have been grouped into seven operational loss event type. Seven types of events such losses are divided into groups as follows: internal fraud, external fraud, employment practices and workplace safety, Clients, products and business practices, physical assets damages, business disruption and system failure, and execution, delivery, and process management.

2.3. Operational Risk Management

Structured approach to managing uncertainty related to threats, which consists of the activities of risk assessment, developing strategies to address the risks arising and the reduction of risk using managerial resources that exist.

Operational risk management is part of one of risk management. This is a concern many companies because of operational risk is not just happening at commercial banks but also occurs in all companies. In the Basel II classification of

the types of operational risk events are more than 30 types of operational risk loss event type, and each type has several subtypes of type. When causality is modeled and included all types of risk events, then the model is relatively complicated to be solved because the relationship is complex, its main quantitative operational risk. Decompose large models into smaller sub-model facilitates the modeling task, especially on operational risk quantification system is very complex. Decomposition approach is an approach that is relatively easier to overcome these challenges. This method maintains the dependency and the impact of failure, thus facilitating aggregation of results at the last step (Supatgiat, Kenyon, and Heusler, 2006).

Framework for risk management according to ISO 31000 can be seen from Figure 2 below.

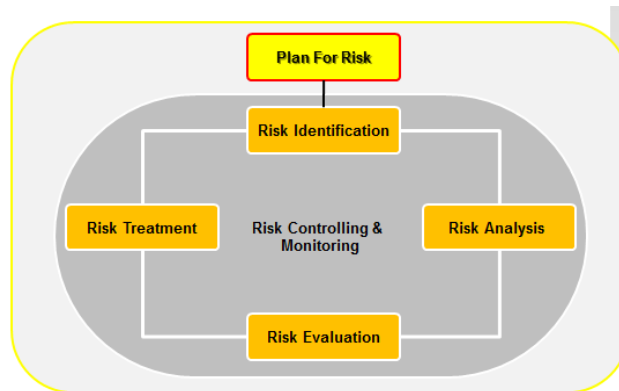


Figure 2. Risk Management

2.4. Risk Breakdown Structure (RBS)

Risk breakdown structure (RBS) has been recognized as a useful tool for structuring the process of risk, and has been included in the standard number of risks and guidelines (eg, Project Management Association, 2004; Project Management Institute, 2004). RBS in this definition is similar to the Work Breakdown Structure (WBS), as a source-oriented grouping of project risks that regulate and determine the total project risk exposure. Therefore, RBS is a hierarchical structure of the potential sources of risk, which may help to understand the risks faced by the project. Utana benefits and use of RBS was as follows (Hillson, 2002a, b): The concept that risk management is a knowledge management has previously been delivered by Neef (2005). This idea is implemented in this paper through the construction of an RBS through the conversion of existing information in the organizational documents into valuable knowledge that can be used by management to produce effective risk management plans. Which integrates risk management and knowledge management (knowledge management) into one homogenous method that starts with the existing information and ends with the knowledge that comes as RBS, which serves the basis for decision making in relation to risk management plans.

2.5. Analytic Network Process (ANP)

ANP is a multi-criteria assessment methods for structuring and decision analysis that has the ability to measure the consistency of assessment and flexibility in the choice of the level subkriteria.

Some of the literature review shows the use of the Analytic Network Process Method of ANP with the reliability of the model represents reality better than the AHP model (Tasklicali & Ercan, 2006). Saaty (2008) showed ANP useful in dealing with complex decisions involving dependence and feedback are analyzed in the context of benefits, opportunity, cost and risk. It has been applied literally in the hundreds of examples of both real and hypothetical. ANP also has been validated in several instances. People often argue that the subjective assessment that one should not expect the results to correspond with objective data. It is important in decision making is how a decision produces a valid answer in practical terms. But it was put in the framework of garbage in garbage out without ensuring the validity of long-term outcome. In another side to the decision-making is normative. For this, the ANP describes the approach to science rather than normative approach and perspective. Produces the best result not simply in accordance with the values of decision makers, but also with risks and dangers faced by the decision. Bhattarai (2009) explains that the application of AHP / ANP in the banking sector is still less than three percent of the total research applications in banking. More intense research carried out since 2000. After the global financial crisis, research and application of AHP / ANP more specifically triggered by the banking

sector to meet the needs of integration with traditional credit information systems. It also shows that after the Asian financial crisis, an example of research and application of AHP / ANP has grown in countries such as Thailand, Indonesia, Vietnam and Taiwan. For this, China is relatively more advanced in the use of AHP application / ANP. There is a growing need of decision support system based on AHP / ANP in the banking sector. AHP, ANP characters above describes the real world representation of the problem under consideration. Therefore, the ANP to be an interesting decision tool, and has been used in various fields in recent years. Particularly, ANP has been applied to supplier selection. (Li, Sun, & Du, 2008).

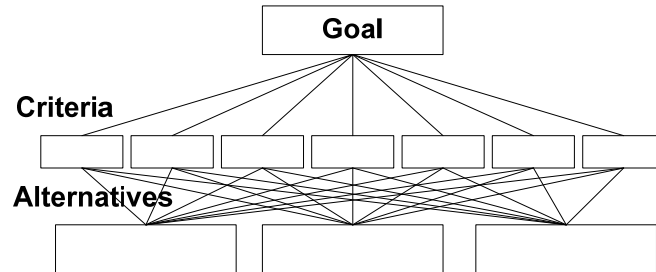


Figure 3. Three hierarchy level
(Source: Saaty dan Vargas, 2006, Page. 7)

Figure 4 shows a linear top-down hierarchical structure. A network spreads in all directions and involves cycles between clusters and loops in the same cluster. The structure of the feedback network has no linear relationship top-to-bottom of the hierarchy, but more inclined to be like a network, with cycles liaison between its components, which could no longer referred to as a level and with a loop that connects with itself.

ANP can be divided into two forms:

- A linear-hierarchical ANP which has a goal, criteria, and subcriteria arranged in 3 levels, where level subcriteria also called the cluster level. It is also called the control hierarchy or network of criteria and subcriteria that control interactions exist.
- ANP which has a network structure consisting of the relationship between elements and clusters. Elements are entities in the system that interact with each other, which can be either units or subcriteria criteria, stakeholders, decision makers, results to be achieved, alternative, and so on.

The difference form of linkage hierarchical and non-hierarchical depicted in Figure 4.

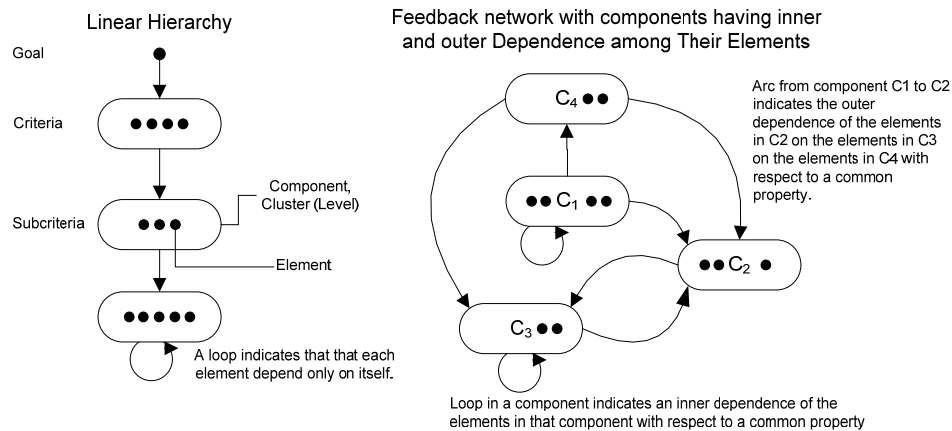


Figure 4. Hierarchical Structured Linear and Non Linear Network
(Source: Saaty dan Vargas, 2006, Page 8)

Benefits of ANP by Saaty is the consistency of pairwise comparisons provide certainty, reduce the subjectivity of decision making, and provides a clear structure of the problem. In consideration of the relationship between elements in the decision-making problems, ANP method makes better sense of the complex issues between the elements of decision-making, which at the same time increasing the reliability of decision making (Yuksel & Dagdeviren, 2007).

3. Research Methodology

Cooke and Goossens (2004) recommend that experts be selected based on reputation, experience, and publications. Morgan et al. (2002) recommend that experts have a maturity in terms of affiliation, training, and subjects. The background is very important when choosing a panel, as it allows the parameters in assessing predisposition.

Respondents in this study are the Internal Audit Department., Branches Operational Management Department. At the operational team of Branch Manager, Representative Head and Section Head of PT ABC Jakarta and Depok on the recommendation of the Head Office team. Jakarta and Depok is a region with the following criteria: implementation of a comprehensive system and procedural, is the pilot project for the development of application systems and other programs, the demographic structure of the dense and complex area and the type of consumer financing and varied.

Measures of operational risk measurement design can be seen in figure 5 below.

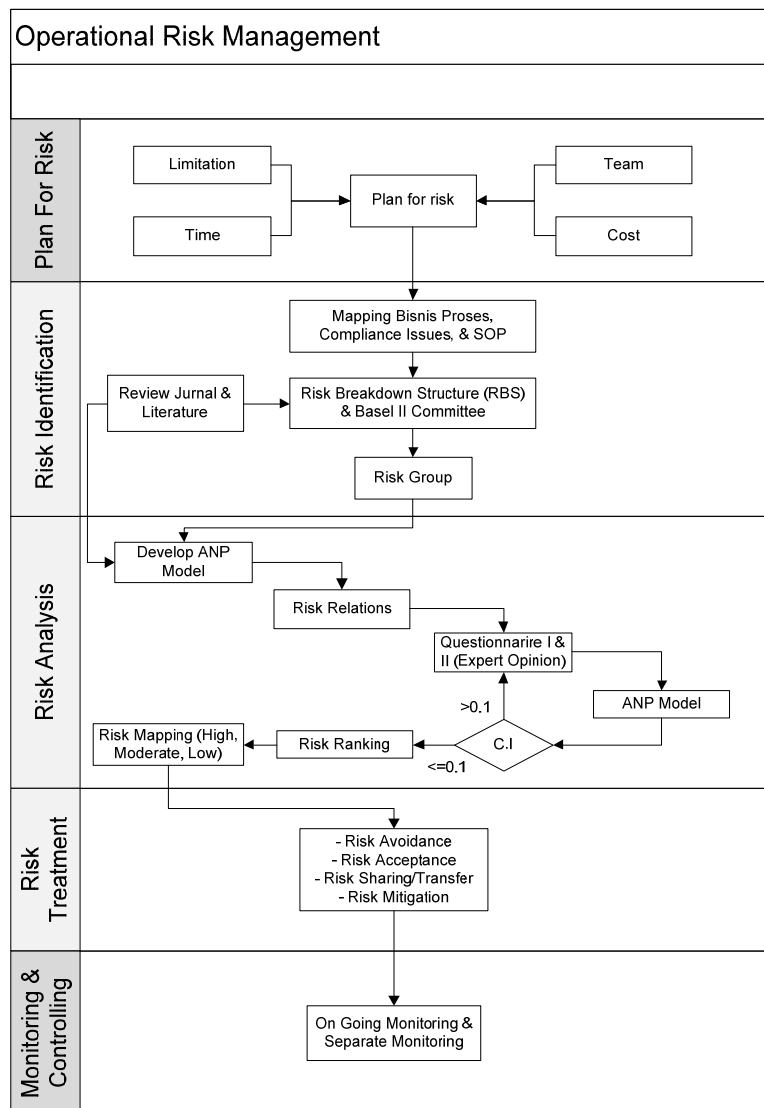


Figure 5. Operational Risk Management Diagram

4. Data and Analysis

Secondary data are obtained, among others, Company Profiles, historical data in the form of company data Internal Audit and Self Compliance from 2007 to 2009.

4.1. Risk Register

In this study the risk register lists are compiled from the results of data compliance and internal audit and the results of interviews with the methods of Risk Breakdown Structure (RBS). Risk register 12 departments with 98 criteria and 569 the risks inherent in the process of branch operations. Which is then transformed into the Basel II Committee into 21 groups of risk and external risk categories.

4.2. Risk Analysis

Formulation of Model and Questionnaire refers to the hierarchical structure of ANP with the following models:

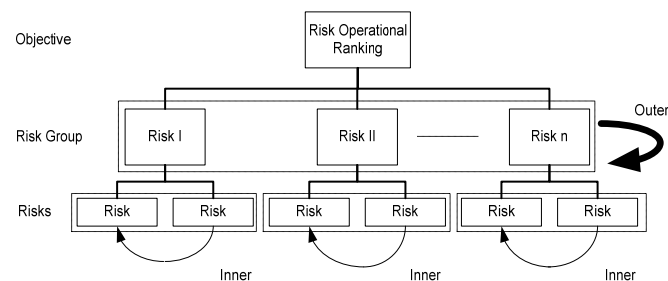


Figure 6. ANP Model of Operational Risk

The model is then transformed into software superdecision 2.0.8. with the following model.

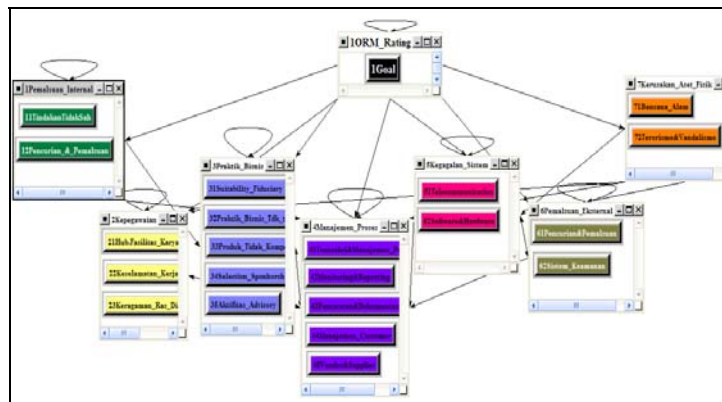


Figure 7. ANP Risk Model

4.3. Output Model

Risk mapping based on the level of influence and impacts based on the testimony of respondents (the questionnaire) by mapping based on three categories: high, moderate, and low.

In Table 1. below, can be seen ranking of the 21 groups that risk. Furthermore, only the risks included in the category of high and moderate handling actions are analyzed.

Table 1. Output of ANP

Data Name	Normalized By Cluster	Limiting
11 Unauthorized Activity	0,75	0,068374
12 Theft & Fraud	0,25	0,022791
21 Employee Relations	0,24	0,02542
22 Safe Environment	0,55	0,05818
23 Diversity & Discrimination	0,21	0,022198
31 Suitability_Fiduciary	0,268	0,075906
32 Improper Business	0,175	0,049496
33 Product Flaws	0,332	0,094052
34 Selection_Sponsorship	0,103	0,029118
35 Advisory Activity	0,122	0,0346
41 Transaction capture, Execution & Maintenance	0,315	0,056749
42 Monitoring & Reporting	0,28	0,050568
43 Customer Intake & Documentation	0,08	0,014476
44 Customer Account Management	0,147	0,026554
45 Vendor & Supplier	0,178	0,032082
51 Telecommunication	0,5	0,110879
52 Software & Hardware	0,5	0,110879
61 Theft & Fraud	0,333	0,020068
62 Systems Security	0,667	0,040136
71 Natural Disaster	0,667	0,038316
72 Terrorism & Vandalism	0,333	0,019158

Grouping risks into categories of high, medium, and low is done by calculating the cumulative percentage of the value of limiting each risk, if the value of the cumulative percentage has exceeded 50%, including the high risk category. In Table 4.3, which falls under the category of cumulative risk percentage is above 50% were seven moderate risk based on the Pareto Law, there were 13 cumulative risk to the level of 82.02%.

Based on limiting, can be seen that the greatest risk is the risk in operational processes for telecommunications 0.110879, followed by software and hardware risk of 0.110879 where these risks contained in the category of system failures and business disruptions, product flaws at 0.094052, and the risk suitability, disclosure, and fiduciary of 0.075906, the risk of unauthorized activity of 0.068374, 0.05818 for safe environment risks, and transaction capture, Execution & Maintenance of 0.056749. On the other hand, other risks are low-risk category (low) in laboratory conditions the company and less significantly affected because of the seven risk model above already covers 82.02%.

The risk of system failures and business disruptions of telecommunications risks and risks of software and hardware has the highest value compared with other risks. In the present study Ripmiatin Endang (2005) shows the results of relevant research by taking a case study on one bank in Indonesia which shows that the risk of business disruption and system failure is the most important risk issues among other risks. This is consistent with the results of the assessment of respondents who believe that business disruption and system failure is still the most important risk issues on financial company of PT ABC because it is very disturbing levels of efficiency and effectiveness of daily operations. There are two factors that resulted in the risk of system failure (hardware & software) that is operator errors and application errors, where a wide range of effects.

4.4. Risk Management Handling Strategy

In general, the treatment of a risk is divided into four categories (Susilo and Kaho, 2010). As for the risk management strategy that is risk acceptance, ie not doing any treatment against the risks. Risk avoidance, means not conduct or continue activities that pose risk. Risk sharing transfer, which is an action to reduce the possibility of risk or risk impact. This was done among others through insurance, outsourcing, subcontracting, follow hedge foreign currency transactions, and others. Mitigation, which is conducting the treatment of risk to reduce the possibility of risk, or reduce the impact of event risk, or reducing both the likelihood and impact. This treatment is actually part of

the daily activities of the organization. For implementation of mitigation, there are several kinds, namely prevention, preparedness, response, and recovery.

Then divided into several major groups namely:

- Human Resource Development (Internal); recruitment process, training for keypeople, career development that is measurable.
- Development of an integrated system of risk management; build a duplicate network system with automatic configuration. And develop a disaster recovery system.
- Establish cooperation with external parties (suppliers and vendors) in clear agreement.
- Conduct periodic evaluation of the SOP, including preparation of SOPs for emergency conditions such as when a network failure telecommunication surgery.

4.5. Risk Management Monitoring Strategy

In the company carried out the process of monitoring and controlling that are layered. In monitoring and controlling the development done by two things:

- On Going Monitoring: To monitor the continuous nature monitoring done by regular monitoring of daily monitoring, such as monitoring daily cash flow by the cashier or the financial section. Monitoring is done to ensure that the standard operation has been run effectively and on target. In addition to early detection of potential irregularities so as to facilitate in the identification, analysis, evaluation and treatment as what needs to be applied. Through the monitoring process is also done to monitor and evaluate the process so that it becomes part of the process of updating the process and operational risks such as whether there are processes that are not relevant anymore to be eliminated. It is then carried out such documentation form that contains a daily news show about the time of monitoring, who pemantaunya, what its findings, and recommendations on the findings.
- Separate Monitoring (Monitoring by Third Party: Internal Audit or External Audit). In separate models of monitoring and controlling the monitoring was conducted in three groups:
 1. *Self Compliance/Assesment*
 2. *Internal Audit*
 3. *External Audit*

5. Conclusion

Based on the result of research, the conclusion are:

There are 21 groups of risk (that fall into seven categories of risk) with 569 items of risk and risk item due to external factors such as natural disasters and vandalism, which became subkriteria the ANP model. Those risks are operational risks in the financing company PT on ABC. Risks that have a major influence in the company's operations based on risk ranking of the ANP model is the risk of telecommunications, software and hardware risk, the risk of non-competitive products, suitability and fiduciary risk, the risk of unauthorized actions, safety risks, and risks of the transaction and process management. Coping strategies used by adopting a model of four strategies of risk acceptance, risk avoidance, risk sharing / transfer and risk mitigation. The strategy adapted to the scale of risk influences both the frequency and impact. The pattern of monitoring and controlling shared in some of On Going Monitoring (Monitoring Sustainability) is attached to the PIC in charge of operations. And others are: Separate Monitoring (Monitoring by Third Party: Internal Audit or External Audit) in three groups: Self Compliance / Assessment, Internal Audit and External Audit.

Suggestions for further research is needed to be a model calculation of operational risk that can be transformed into determining the allocation of capital that can surround the possibility of operational risk. With the implementation of operational risk measurement model can be seen data losses in recent years. So the backup can be determined that the amount of capital to cover operational risk. Moderate scope of the study is limited in some areas and it is open to be more developed on a larger scope. Consideration of selection and screening of risk need to be accommodated on a risk analysis model thus avoiding the risk of elimination at this stage of risk identification.

This study includes measurement of operational risk in finance companies. Management of risk management in the financial world (and Non-Bank Financial Institutions bank) the wider business risk. Business

risks of operational risk, credit risk, market risk, liquidity risk, reputation risk, compliance risk, and legal risk. Therefore we need a comprehensive effort to analyze the measurements against those risks making it possible to analyze business risks broadly against a company by determining the allocation of capital to cover the overall business risk.

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Biography

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