



Risk Management Analysis on KKM LKF FTI UKSW Website Using ISO 31000 Framework

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Abstract

Currently, many organizations are utilizing the results of the application of information technology in carrying out their business processes. The Satya Wacana Christian University Student Institute KKM Points Website is a website created with the aim of assisting the process of inputting student activity points. Currently the use of the website is still not optimal, so it is necessary to do a risk management analysis. Website risk management analysis is carried out using the ISO 31000 framework with 4 stages. The research results can be used as a reference for organizations related to risk management so that the use of the website can be carried out optimally in accordance with organizational goals.

Keywords: Website, Risk Management, ISO 31000 Framework.

1. INTRODUCTION

The Student Executive Board (BEM) is a student executive institution that accommodates the aspirations of students at the institutional level. Another name of the Student Executive Board (BEM) is the Faculty Student Senate (SMF). As an executive institution that is ready to serve students, BEM / SMF is required to provide professional and quality services. The Student Senate of the Faculty of Information Technology, Satya Wacana Christian University (SMF FTI UKSW) consists of the Chairman, Secretary and Treasurer or commonly referred to as the Daily Governing Body (BPH) and assisted by 4 fields under it. Field 1 takes care of Humanistic Skills, Field 2 takes care of Professional Skills, Field 3 Student Welfare, and Field 4 Internal and External. One of the departments located in field 3, namely the Department of Student Activeness Credit (KKM). The task of the KKM Department is to assist students in input points as one of the graduation requirements at the faculty. Currently, the application of information technology is an important component in supporting daily activities. In addition, security factors and information services are also things worth noting. The form of



application of information technology by the KKM Department is to use a website-based information system to help manage students' points.

In the application of information technology there are various risks that may occur and make the application not optimal. Risk is a possible event that can cause harm to an organization / company. Risk can result in non-optimal business processes that occur. There are several risks experienced by the KKM Department such as the server used to go down. Based on existing constraints, it is necessary to conduct a risk management analysis to optimize the business processes that occur. Risk management in running an important business is done to protect the organization from risks that hinder the achievement of goals and various things that have the potential to cause harm to the organization. Risk management is an attempt to manage the risks that will occur which the consequences of that risk can cause harm to the organization or company. Risk management is one of the important things that need to be done in every project that will be done by the organization or company. Through risk management, it is expected that the company can take the right decisions to minimize the losses that will be experienced.

Previous research was conducted using the ISO 31000 framework at Soekarno Hatta Airport in 2013. The research conducted by Terry George Abisa, was conducted with 3 stages of risk analysis in accordance with ISO 31000 [3]. In 2016 a similar study was conducted at the National Aeronautics and Space Institute (LAPAN) conducted using the ISO 31000 framework. The research discussed the process of analyzing information technology risks on the Space Weather Information and Forecast Services (SWIFTS) website which produces documentation of the level of risk from the website. In 2017, research on Information Technology Risk Analysis of the Human Resources Management System (HRMS) program was also conducted using the ISO 31000 framework[5]. The purpose of the research is to find out the possible risks that will occur in using the HRMS program and can be given the right treatment. Similar research that has been conducted, using the ISO 31000 framework, helps organizations or companies achieve their mission vision and minimize the opportunity of threats. Risk management analysis is a very important thing to do so as not to interfere with the course of business processes of an organization. With this research, it is expected to be a reference for companies or organizations in conducting risk management.

2. METHOD

Several stages are carried out to complete this research in accordance with the figure below. The method used is a qualitative method that is a method that can identify problems carefully. So that a clear picture of the problem is obtained.

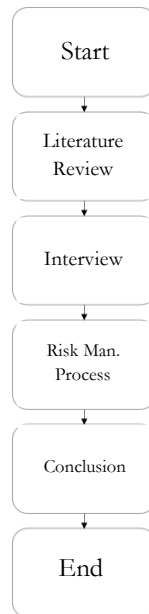


Figure 2. Research Methods

3.1. ISO 31000 literature study

Literature study is an attempt to gather information from various books, references, as well as similar research results so that the author gets more knowledge about the problem to be studied. Literature studies can be done by reading many similar journals, books, articles and so on that can support research.

3.2. Interview

Interviewing is the most common method of data collection that involves respondents and researchers coming face to face in the process of obtaining information. The interview process was conducted with Sdra. Ari Panen Haster as Head of Field III – Student Welfare of SMF FTI UKSW on July 28 and August 6, 2021, via Google Meet.

3.3. Risk Management Process

The risk management process is an effort made to manage risk. In this study, the risk management process is carried out by creating a Risk Assessment consisting of Risk Identification, Risk Analysis, Risk Evaluation, Risk Treatment and Risk Supervision and Control.

3.4. Conclusion

From the research that has been done, researchers will conclude new things obtained.

3. RESULT AND DISCUSSION

31. Risk Identification

1) Asset Identification

The asset identification stage of the KKM LKF FTI UKSW website can be seen in Table 1.

Table 1. Identification of KKM Website Assets

Identify KKM FTI UKSW Website Assets	
Data	FTI UKSW student data
	Certificate data inputted and separated by student name
Software	Website KKM FTI UKSW
	Microsoft Excel
	KKM Student Data Input Application
Hardware	Monitor
	CPU
	Router
	Kabel LAN
	Printer

2) Identify Possible Risks

The stage of identifying possible risks to the KKM LKF FTI UKSW website can be seen in Table 2.

Table 2. Identify possible risks of KKM website

Identify Possible Risks of KKM FTI UKSW Website		
Factor	Code	Possible Risks
Nature and the Environment	RA001	Landslide
	RA002	Lightning
	RA003	Fire
	RA004	Earthquake

Human (HR)	RM001	Lack of human resources in quality and quantity
	RM002	Human Error
	RM003	Less user-friendly display
Systems and Infrastructure	RS001	Hardware failure/malfunction
	RS002	Server Down
	RS003	System Crash
	RS004	Data Corrupt
	RS005	Failure of continuing development
	RS006	Unscheduled maintenance process
	RS007	Power outage
	RS008	Absence of system documentation
	RS009	The network in bobol

3) Identify risk impacts

The stage of identifying the risk impact on the KKM LKF FTI UKSW website can be seen in Table 3.

Table 3. KKM Website Risk Identification Table

Identify the Risk Impact of KKM FTI UKSW Website		
Code	Possible Risks	Risk Impact
RA001	Landslide	Damage to infrastructure to cause financial losses and can hinder business processes
RA002	Lightning	Damage to infrastructure to cause financial losses and can hinder business processes
RA003	Fire	Causing the organization to lose data so that it experiences losses, one of which is in terms of finances and can hinder business processes

RA004	Earthquake	Damage to infrastructure so as to cause financial losses and can hinder business processes
RM001	Lack of human resources in quality and quantity	Not optimal in utilizing the system
RM002	Human Error	Data from the server cannot be displayed
RM003	Less user-friendly display	The resources operating the system often encounter errors
RS001	Hardware failure/malfunction	Hindering business processes
RS002	Server Down	Unable to access database
RS003	System Crash	Unable to access database
RS004	Data Corrupt	The data displayed is inaccurate
RS005	Failure of continuing development	There are features that have not been supported
RS006	Unscheduled maintenance process	Lack of optimal system performance
RS007	Power outage	The cessation of business processes
RS008	Absence of system documentation	Programmers have difficulty in developing programs
RS009	The network is leaky	Theft of organizational data

3.2. Risk Analysis

The risk analysis stage of the KKM LKF FTI UKSW website can be seen in Table 4.

Table 4. KKM Website Risk Analysis Table

	RISK	LIKELIHOOD*	IMPACT*	RISK VALUE
RA001	Landslide	1	3	3
RA002	Lightning	2	2	4

RA003	Fire	1	2	2
RA004	Earthquake	1	2	2
RM001	Lack of human resources in quality and quantity	3	4	12
RM002	Human Error	2	3	6
RM003	Less user-friendly display	4	3	12
RS001	Hardware failure/malfunction	3	3	9
RS002	Server Down	3	5	15
RS003	System Crash	3	4	12
RS004	Data Corrupt	2	5	10
RS005	Failure of continuing development	5	4	20
RS006	Unscheduled maintenance process	5	4	20
RS007	Power outage	3	3	9
RS008	Absence of system documentation	4	3	12
RS009	The network in leaky	2	5	10

*Likelihood:

1 = very rare

2 = rare

3 = neutral

4 = often

5 = very often

*Impact:

1 = very light

2 = light

3 = neutral

4 = weight

5 = very heavy

3.3. Evaluasi Resiko

The risk evaluation stage is the stage of determining the impact and likelihood of the KKM LKF FTI UKSW website. The results of the assessment can be seen in Table 5.

Table 5. KKM Website Assessment Table

Likelihood	Certain	5		RS009	RS004		
	Likely	4			RM001		RS005 RS006
	Possible	3	RA001	RM002	RS001 RS007	RM003 RS008	
	Unlikely	2	RA003 RA004	RA002			
	Rare	1					
				1	2	3	4
			Insignificant	Minor	Moderate	Major	Catastrophic
Impact							

Then the risk level can be identified and included in the risk evaluation matrix based on the impact (impact) and likelihood (likelihood) in Table 6.

Table 6. Risk Evaluation Table

RESIKO		LIKELIHOOD	IMPACT	RISK LEVEL
RA001	Landslide	1	3	Low Risk
RA002	Lightning	2	2	Low Risk
RA003	Fire	1	2	Low Risk
RA004	Earthquake	1	2	Low Risk
RM001	Lack of human resources in quality and quantity	3	4	Moderate Risk
RM002	Human Error	2	3	Moderate Risk

RM003	Less user friendly display	4	3	Moderate Risk
RS001	Kegagalan/kerusakan hardware	3	3	Moderate Risk
RS002	Server Down	3	5	High Risk
RS003	System Crash	3	4	Moderate Risk
RS004	Data Corrupt	2	5	Moderate Risk
RS005	Failure of continuing development	5	4	High Risk
RS006	Unscheduled maintenance process	5	4	High Risk
RS007	Power outage	3	3	Moderate Risk
RS008	Absence of system documentation	4	3	Moderate Risk
RS009	The network in leaky	2	5	Moderate Risk

3.4. Perlakuan Resiko

The stage of risk treatment of the KKM LKF FTI UKSW website can be seen in Table 7.

Table 7. Risk Treatment Table

RESIKO		RISK LEVEL	HANDLING
RA001	Landslide	Low Risk	1. Provide backup servers in other locations 2. Choosing the right data center location
RA002	Lightning	Low Risk	Provide a lightning rod.
RA003	Fire	Low Risk	1. Provide fire extinguishers 2. Choosing the right data center location
RA004	Earthquake	Low Risk	1. Provide backup servers in other locations 2. Choosing the right data center location

RM001	Lack of human resources in quality and quantity	Moderate Risk	Recruiting competent resources in their fields
RM002	Human Error	Moderate Risk	<ol style="list-style-type: none"> 1. Giving verbal and written reprimands 2. Provide training in accordance with the field of work
RM003	Less user-friendly display	Moderate Risk	<ol style="list-style-type: none"> 1. Conducting Research related to UI / UX that is user friendly 2. Create a website usage manual
RS001	Kegagalan/kerusakan hardware	Moderate Risk	Checking hardware regularly and maintenance
RS002	Server Down	High Risk	Server maintenance periodically
RS003	System Crash	Moderate Risk	Periodic system maintenance
RS004	Data Corrupt	Moderate Risk	Create a backup schedule periodically
RS005	Failure of continuing development	High Risk	Control and supervise the system and fix any problems caused by the system
RS006	Unscheduled maintenance process	High Risk	Schedule a routine maintenance process
RS007	Power outage	Moderate Risk	<ol style="list-style-type: none"> 1. Provide generator sets 2. Using more than one different power source
RS008	Absence of system documentation	Moderate Risk	If the addition of features is directly coordinated to the documentation section
RS009	The network in leaky	Moderate Risk	Strengthen network security

3.5. Risk Management

Risk management is carried out with the aim of knowing the right risk treatment. Such as changing the approach to risk, evaluating mitigation plans, or changing risk contiguous plans.

4. CONCLUSION

Based on the research that has been done, it can be concluded that the risk management carried out on the KKM LKF FTI UKSW website consists of several processes, namely risk identification, risk analysis, risk evaluation, risk treatment and risk management. The study found 16 risks associated with the KKM LKF FTI UKSW website with details: 4 low risks (RA001, RA002, RA003, RA004), 9 moderate risk (RM001, RM002, RM003, RS001, RS003, RS004, RS007, RS008, RS009), 3 high risk (RS002, RS005, RS006). The risk management process that occurs today is already underway, but mostly based on experience alone.

REFERENCE

- [1] B. Basri and N. R. Dwiningrum, "Peran Ormawa dalam Membentuk Nilai-nilai Karakter di Dunia Industri (Studi Organisasi Kemahasiswaan di Politeknik Negeri Balikpapan)," *Al-Adabiya J. Kebud. dan Keagamaan*, vol. 15, no. 01, pp. 139–160, 2020, doi: 10.37680/adabiya.v15i01.273.
- [2] U. Nugraha and R. Istambul, "Implementation of ISO 31000 for information technology risk management in the government environment," *Int. J. Innov. Creat. Chang.*, vol. 6, no. 5, pp. 219–231, 2019.
- [3] F. M. Hutabarat and A. D. Manuputty, "Analisis Resiko Teknologi Informasi Aplikasi VCare PT Visionet Data Internasional Menggunakan ISO 31000," *J. Bina Komput.*, vol. 2, no. 1, pp. 52–65, 2020, doi: 10.33557/binakomputer.v2i1.792.
- [4] G. W. Lantang, A. D. Cahyono, and M. N. N. Sitokdana, "Analisis Risiko Teknologi Informasi Pada Aplikasi Sap Di Pt Serasi Autoraya Menggunakan Iso 31000," *Sebatik*, vol. 23, no. 1, pp. 36–43, 2019, doi: 10.46984/sebatik.v23i1.441.
- [5] F. Harimurti, "MANAJEMEN RISIKO, FUNGSI DAN MEKANISMENYA Fadjar Harimurti Fakultas Ekonomi Universitas Slamet Riyadi Surakarta," *J. Ekon. dan Kewirausahaan*, vol. 6, pp. 105–112, 2006. (3)
- [6] M. Suparno, "Manajemen Risiko Dalam Proyek Konstruksi," *Bangunan*, vol. 20, no. 1, 2015.
- [7] T. George Abisay and . N., "Manajemen Risiko Pada Bandara Soekarno Hatta Berbasis Iso 31000," *J. Tek. Ind.*, vol. 14, no. 2, p. 116, 2014, doi: 10.22219/jtiumm.vol14.no2.116-130.
- [8] F. L. Nice and R. V. Imbar, "Analisis Risiko Teknologi Informasi pada Lembaga Penerbangan dan Antariksa Nasional (LAPAN) pada Website

- SWIFTS Menggunakan ISO 31000,” J. Inform. dan Sist. Inf., vol. 2, no. 2, pp. 1–11, 2017.
- [9] S. Agustinus, A. Nugroho, and A. D. Cahyono, “Analisis Risiko Teknologi Informasi Menggunakan ISO 31000 pada Program HRMS,” J. RESTI (Rekayasa Sist. dan Teknol. Informasi), vol. 1, no. 3, pp. 250–258, 2017, doi: 10.29207/resti.v1i3.94.
- [10] N. U. Handayani, D. P. Sari, D. O. Irawan, and Z. Afdi, “Departemen Teknik Industri Universitas Diponegoro,” vol. XII, no. 1, 2017.
- [11] J. J. Heckman, R. Pinto, and P. A. Savelyev, *Fundamentals of Enterprise Risk Management*. 1967.
- [12] A. Novia Rilyani, Y. A. Firdaus W ST, and D. S. Dwi Jatmiko, “Analisis Risiko Teknologi Informasi Berbasis Risk Management Menggunakan ISO 31000 (Studi Kasus : i-Gracias Telkom University) Information Technology Risk Analysis Based On Risk Management Using Iso 31000 (Case Study : i-Gracias Telkom University),” e-Proceeding Eng., vol. 2, no. 2, pp. 6201–6208, 2015.
- [13] P. Hopkin, *Fundamentals of Risk Management : Understanding, Evaluating, and Implementing Effective Risk Management*. 2010.
- [14] P. P. Thenu, A. F. Wijaya, and C. Rudianto, “Analisis Manajemen Risiko Teknologi Informasi Menggunakan Cobit 5 (Studi Kasus: Pt Global Infotech),” J. Bina Komput., vol. 2, no. 1, pp. 1–13, 2020, doi: 10.33557/binakomputer.v2i1.799.
- [15] R. Mita, “Wawancara Sebuah Interaksi Komunikasi Dalam Penelitian Kualitatif,” *Jurnal Ilmu Budaya*, vol. 2. p. 9, 2015, [Online]. Available: <https://media.neliti.com/media/publications/100164-ID-wawancara-sebuah-interaksi-komunikasi-da.pdf>.