

Implementation of Library Information System Risk Management: A Case Study of Surabaya City Library

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Implementation of Library Information System Risk Management: A Case Study of Surabaya City Library

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Abstract

This research focuses on the application of information system risk management as a form of disaster mitigation plan. The risk that is most often experienced by libraries is data security problems. This research model is descriptive qualitative. This research emphasizes the process of analyzing the phenomenon of the object of research using scientific logic. The application of IT in the SURABAYA City Library has the potential for risk to data security and force majeure aspects. Based on the risk analysis in this study, the recommendations for risk application in SURABAYA City Library IT are elimination and engineering. The manifestation of the two recommendations is to create a library data access protocol by using two times of authentication to avoid data theft attempts due to infiltration, hacking, and cracking.

Keywords: Risk Management; Information Technology; Library

Penerapan Manajemen Risiko Sistem Informasi Perpustakaan: Studi Kasus Perpustakaan Kota Surabaya

Abstrak

Penelitian ini berfokus pada penerapan manajemen risiko sistem informasi sebagai bentuk rencana mitigasi bencana. Risiko yang paling sering dialami oleh perpustakaan adalah masalah keamanan data. Model penelitian ini adalah deskriptif kualitatif. Penelitian ini menekankan pada proses analisis fenomena obyek penelitian menggunakan logika ilmiah. Penerapan TI di Perpustakaan Kota Surabaya berpotensi risiko pada keamanan data dan aspek force majeure. Berdasarkan analisis risiko dalam penelitian ini, rekomendasi penerapan risiko pada TI Perpustakaan Kota Surabaya adalah eliminasi dan engineering. Manifestasi dari kedua rekomendasi tersebut adalah dengan membuat protokol akses data perpustakaan dengan menggunakan dua kali otentifikasi untuk menghindari upaya pencurian data akibat tindakan infiltrasi, hacking, dan cracking.

Kata Kunci: Manajemen Risiko; Teknologi Informasi; Perpustakaan

INTRODUCTION

Application of Library Information System Risk Management: A Case Study of Surabaya City Library Information systems have become commonly applied in a library. The application of this application or information system is a form of excess development of Information Technology (IT) itself. The importance of implementing this information system is one form of effort to increase the productivity of the company or organization. Research conducted (Abri & Mahmoudzadeh, 2015; Brynjolfsson & Yang, 1996) reveals that there are significant changes in terms of productivity in the manufacturing industry when companies implement information system.

The application of information systems in the manufacturing industry is indeed very easy to measure the level of efficiency produced. However, the conditions will be different when IT is applied to non-profit entities or organizations. Non-profit organizations such as libraries are quite difficult to measure the extent of the impact or influence of IT on increasing productivity. Research conducted (Hajli et al., 2015; Polák, 2017) reveals the existence of a productivity paradox over the implementation of IT in non-profit organizations. This is because the output of non-profit organizations is in the form of intangible products. The study (Kijek & Kijek, 2019) also reaffirms that the application of IT can indeed improve organizational performance but its measurement is quite difficult.

The library is a non-profit organization that is very close to information systems and their development. Libraries are an integral part of the parent organization. But now, the

library is developing into its own entity (Dina & Juniarta, 2021). The next development, IT becomes a necessity in libraries (Wang et al., 2021), where IT is used as a tool or tools to help the efficiency of library administrative work. Furthermore (Kirilov & Mitev, 2021) reveal that the development of IT is not only limited to administrative work. Information technology embedded in libraries has developed into Artificial Intelligence (AI) in terms of information retrieval. The development of artificial intelligence is also used as a demographic mapping of users. Studies conducted by (Fahrizandi, 2020; Vijayakumar & Vijayan, 2011) emphasize that the application of IT in libraries greatly assists the analysis process not only from the internal side of the library, but is also able to provide information on changes in user behavior trends. Another finding of the benefits of using IT in libraries is based on research (Pouti & Taghva, 2020) which reveals that the use of IT in libraries can increase the capability of library services. So, in other words, IT has an extraordinary role in revolutionizing library changes.

Meanwhile, the library continues to develop services to its users in the midst of change and pandemic. Research conducted by (Mahmood et al., 2021) found the fact that there was a change in user behavior from conservative behavior to a more modern one. The study found a new phenomenon of an increasing trend of access to digital information by users to information portals with digital platforms. On the other hand, restrictions and regulations during the pandemic have also changed the behavior of users in seeking information. Studies conducted (Mehta & Wang, 2020) reveal that the pandemic has changed the behavior of users from

conventional access to digital information. This is reaffirmed by (Winata et al., 2021) who found the fact that in the new normal era, users have switched to digital access rather than conventional ones.

The shift in user behavior cannot be separated from the comfortable and safe feeling that users feel when carrying out the information search process (Mansouri & Soleymani Asl, 2019). These changes have an influence on library policy makers to change service patterns from conventional to digital (Twum et al., 2021). One of the benefits derived from the change in service pattern, apart from speed, is also accuracy. Service speed and accuracy as an excess of IT implementation are intangible outputs. So it is also difficult to measure (Peters & Dickinson, 2020). However, the implementation of IT does not mean suspended, because IT needs in the library has become a must.

The latest developments in the application of IT in libraries have reached the use of AI to help library branding (Twum et al., 2021). The application of IT in the library has high benefits, although it is very intangible. But on the other hand, there are risks that are exposed when libraries implement IT as a service tool (Brown, 2015). Some libraries that implement IT do not or have not been literate regarding the IT risks themselves.

Several researchers (Cardoso et al., 2018; Karwasiński, 2012) expressed the need to think and plan in as much detail as possible when libraries will migrate from conventional to digital. This is related to the level of understanding of library managers or stakeholders on the cost benefits of using IT in libraries. Another study (Schmeelk, 2020) revealed that there must be a

standard library digitization framework as the basis for making library Key Performance Indicator (KPI). The index is used as a reference to evaluate the IT performance of the library. In addition to this, based on research (Hariyanto et al., 2021) one thing that is no less important in implementing IT is risk mitigation. Mitigate these risks to reduce the impact of risks caused by things that are not desirable as IT excess itself. This is reinforced by research (Flanagan & Marsh, 2000; Hu et al., 2020; Zeng, 2019) which underscores the importance of providing risk mitigation as a follow-up to IT implementation.

This research focuses on the application of information system risk management as a form of disaster mitigation plan. The risk that is most often experienced by libraries is data security problems. Research conducted (Schmeelk, 2020) emphasizes the need to carry out IT risk mitigation planning. Other research related to the application of risk conducted by (Qintharah, 2019; Santoso & Mujayana, 2021) focuses on three things in the application of risk management. The three things are: 1) elimination; 2) substitution; and 3) administration.

This study also provides recommendations for anticipating risks caused by force majeure in the application of IT. Especially when there is a disruption during the pandemic, IT is present as a tool that provides solutions or mediates in the midst of the need between retaining customers and maintaining business. The study (Santoso, 2022) revealed that there had been an extraordinary change in the business map during the pandemic. These changes force business people to apply IT to maintain business during the pandemic.

Libraries that are present as information service providers cannot be separated from the problem of these changes. However, libraries have benefits or advantages in terms of getting to know IT in their services. At the beginning of the development of IT in the library, it was only used as an administrative tool. But getting here, library IT has developed into AI and an inseparable part of the service element in the library. However, the obstacle that often occurs in libraries is that there is no risk mitigation plan for the implementation of IT. This is exacerbated by the low literacy of the library's Human Resources (HR) related to IT. The implementation of IT in the library only relies on help from third parties. Studies (Aremu & Saka, 2014; Enakrire & Ocholla, 2017) found that most library problems are related to risk management because they buy applications from third parties, and not develop them themselves. Contrary to what has been researched by (Izatri et al., 2020) which describes that the application of risk management will be much easier to run when IT is developed by the library itself.

This study will examine and describe the application of risk management information systems for libraries. The review in this study will focus on recommendations for library IT risk management strategies in the midst of the changing digital era. The object of this research is the Surabaya City Library Archives Agency which has a wide range of access and users. The library is located in the middle of the city with a population of 3.3 million people with the probability of access to the library reaching 1 million visitors per year. The pandemic period that changed the direction of library services, forced the library to optimize the use of IT to reach user services. Meanwhile, the

library will also implement risk management as a form of mitigation of all possible things that will have an impact on the continuity of library services.

RESEARCH METHODS

Qualitative descriptive approach in this study is used to provide analysis on the dynamics of the relationship of phenomena by using scientific logic. Emphasis is on a combination of library research and field research to get the most rational and up-to-date generalizations or conclusions. Literature study in this study was used to explore sources of information on previous research, categories, studies related to IT risk management. Meanwhile, field studies are carried out directly to research objects that meet the criteria in this study. One of the criteria used in selecting research objects is a library that is able to maintain the number of visitor visits during the pandemic. In addition, the object of research must have implemented IT, not limited to the administration, but has become part of the library service in the form of an integrated library information system. This study also uses a Focus Group Discussion (FGD) with the parties or stakeholders who manage the library.

This research has at least 8 (eight) stages starting from the situation analysis of the research object to the conclusion. The following is a chart of the stages in the research:

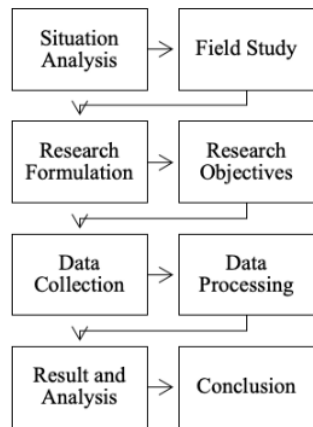


Figure 1 Research Stages
 Source: (Santoso & Mujayana, 2021)

Situation analysis is the phase of profiling the research object. Profiling is carried out to determine the potential risks that may arise. Field study is the stage to determine the scope of research, including who the object is and how wide the scope of the study will be.

Research formulation is a short statement in which there are questions related to the research topic. In other words, the research formulation is a question that the researcher will answer using a certain method.

The research objective refers to a series of questions why you should do this research. Research objectives are basically closely related to research novelty.

Data collection and processing is the activity of researchers collecting research data and then processing them using certain methods. The data in this study were taken from various library sources and then tabulated. In addition, qualitative data sources are also obtained by the object of research and then tabulated.

The results of the data processing are described in the form of a narrative for

later generalization. These generalizations will be used as recommendations for decision making.

The research stages above are continued with the application of risk management. There are at least 4 (four) stages of risk management implementation in this study. The four stages are as follows:

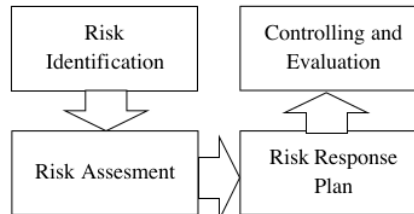


Figure 2 Risk Management Stages

The first stage in this research is to identify risks. Identification is done to determine all possible risks that will be experienced by the library. The identification results are classified into the form of level or severity. Starting from very light, light, medium, heavy, and very heavy.

The second stage is to carry out a risk assessment. This risk assessment is to compare the impact caused by the level of probability of the occurrence of the risk. The output of this stage is information on the type of risk impact caused in the form of qualitative information L (LOW); M (Moderate); H (High); E (Extreme).

The third stage is the response plan from the results of the risk assessment. At this stage, a plan will be made as a response to the results of mitigation and risk identification. The output of this stage is a recommendation for the attitude to be taken. These attitudes include: new service, direct action, planning risk management, and needs stakeholder attention.

The fourth stage is risk evaluation and control. This phase is a follow-up to the results of risk mitigation which is divided into 4 elements. The four elements are: eliminate; substitution; engineering; and administration.

Each stage above is poured into a table for further analysis. The results of the analysis of each stage are described in the form of a descriptive narrative. The generalization of the research is taken from a summary of all stages as outlined in the form of a conclusion table.

RESULTS AND DISCUSSION

The application of risk management in this study uses 5 (five) steps including: a) Determining the context of the risk; b) Identifying Risks; c) Analyze Risk; d) Evaluating Risk; e) Implementation of Risk Management.

A. Determining the Risk Context

This phase aims to determine the risk targets of the Library Information System. The objectives of risk management at the Surabaya Library are: a) a brief description of the potential risks that will be experienced by the City Library related to the implementation of IT; b) obtain initial input on risk management strategies to be minimized; c) advice to stakeholders on the importance of IT risk management in libraries.

B. Identifying Risk

At this stage the library determines all possible risks that will occur. The identification refers to several questions how the risk will occur. The classification used as a form of consequence uses 5 (five) levels, namely: very light, light, moderate, heavy, and very heavy. The identification of library IT risks is described in the following table:

Table 1
Risk Profiling

Level	Impact	Note
1	Very Light	1. The effect of decreasing library productivity 5% - 10% 2. Service is 1 - 5 minutes late from the specified SOP 3. There are customer complaints 1 - 5 users.
2	Light	1. Affect the decrease in library productivity 10% - 15% 2. Service is 10-15 minutes late from the specified SOP 3. There are customer complaints 5 - 10 users.
3	Moderate	1. Affects the decrease in library productivity 15% - 20% 2. Service is late 10-15 minutes from the specified SOP 3. There are customer complaints 10-15 users
4	Heavy	1. Affects a decrease in library productivity 20% - 40% 2. Service is 20 - 45 minutes late from the specified SOP 3. There are customer complaints 15 - 20 users
5	Very Heavy	1. Affects library productivity decline > 40 2. Late service > 1 hour from the specified SOP 3. There are customer complaints > 20 users.

Source: Data processing result, 2022

Based on the table above, it is known that the risk is mild when the impact on the risk that arises is a decrease in performance between 5 to 10% (very light) and > 40% in very severe conditions. This decrease was caused by IT not working as planned.

The lightest risk has not yet had a significant impact. A decrease in productivity at a mild level of risk can still be tolerated. Libraries only need to make adjustments to several work SOPs to adjust the impact of risk.

Meanwhile, the risks that have begun to require attention are at a moderate level.

This is because the impact has begun to disrupt the performance of the library. One of the impacts is a decrease in performance of up to 20%. If this condition is left unchecked or given a response too late, then library performance will continue to fall and will experience a more severe risk. In addition to the impact of decreasing the reference used is the length of service to users when compared to the SOP. The lowest range is a delay of 1 to 5 minutes. Meanwhile, the highest (severe impact) delay is more than 1 hour from the SOP. Meanwhile, the large number of complaints is also an indicator of the impact of risk. The condition is very light when the library gets the number of complaints from 1 to 5 complaints. Meanwhile, in very severe conditions, user complaints > 20 complaints.

The risk is very heavy when it affects the library's performance decline by more than 40%. Conditions like this can lead to paralysis of library services. If these conditions are not anticipated with various response actions, the library will not only be completely paralyzed, but the public's trust in the library will be lost.

Library risk management also identifies possible IT risks. This is to measure and determine the position of the library quadrant when a risk occurs. The table below shows the probability of occurrence in each level of risk.

Table 2

Risk Probability		
Level	Probability	Note
1	Never	Once in 5 years
2	Rarely	Once in a year
3	Seldom	3 times in a year
4	High Probability	Once a month
5	Definitely	>= Once a month

Source: Data processing result, 2022

The table above shows that the highest level of risk probability when it occurs more than once a month. If the probability that a risk occurs more than once a month, then the library is experiencing an emergency. This is because the impact it causes is quite heavy. Especially if the impact is quite severe with a risk repetition rate of more than once a month.

It is different if the probability of occurrence is only 3 times in one year, then it is categorized as rare. If the risk occurs 3 times in one year then on average it occurs once every 4 months. This time span gives sufficient time for the library to anticipate or repair.

Meanwhile, at the lowest level, it has never happened or the probability is less than 1% every 5 years. These possibilities or probabilities are used to map the position of the library's quadrants, so that library managers can make appropriate decisions regarding the implementation of risk management.

C. Analyzing Risk

Risk analysis in the library uses a matrix model by comparing the impact of risk and the probability of risk occurrence. The meeting point of the two shows the position of the Library on the possibility of risk. The following is a matrix table:

Table 3
Risk Impact Level

Risk Freq.	Impact				
	Very Light	Light	Moderate	Heavy	Worst
Definitely	M	H	H	E	E
High	M	M	H	H	E
Seldom	L	M	M	H	E
Rarely	L	M	M	H	H
Never	L	L	M	M	H

Note: L (LOW); M (Moderate); H (High); E (Extreme)

Source: Data processing result, 2022

Based on the table above, extreme impact conditions when the frequency of risk is certain, high, and rare but has a severe/very severe impact. The position of the Surabaya City Library is in the M (Middle) condition with a rare frequency of moderate impact. The most frequent IT risks faced by the Surabaya City Library are data security issues and force majeure (power outages).

The case of a power outage is still something that the library cannot anticipate. The library does not yet have a backup power source in the form of a generator set. In addition to the high investment required, the allocation of library funds is still focused on developing library collections. This power outage will be more frequent during the rainy season. The Surabaya city government through the State Electricity Company often turns off electricity when it rains heavily. This is done to avoid short circuits caused by rainwater. The impact of this blackout is that data access becomes paralyzed, services cannot be carried out because the application requires a source of electrical energy. Meanwhile, the library is not yet equipped with a generator set as backup power. So when there is a power outage the library runs the risk of data loss. In addition to data loss, sudden power surges will cause electronic devices to malfunction.

The potential for damage to electronic equipment will be a serious risk and harm the library if the risk occurs more often. In addition to the blackout factor, the library also has the potential to experience illegal access by library users.

However, illegal data access to the library is rare with moderate impact. Infiltration, phishing, or cracking of library data is rare. Even if the probability exists, it's probably only once a year. IT admins can quickly

anticipate this, so the impact is not too worrying.

Risk mitigation is based on the position of the matrix above and then re-analyzed to make a decision. Decision making on the results of the analysis of the table above refers to the representation of the results of the matrix. The following is a representation of each level of risk:

Table 4
Recommendation

Level	Recommendation
Low	New Service SOP
Middle	Direct Action
High	Planning Risk Management
Extreme	Need attention Stakeholder

Source: Data processing result, 2022

Based on the recommendation table above, and the position of the IT risk matrix of the Surabaya City Library is in the middle position. The follow-up recommendation in this position is direct action. As explained in the previous paragraph, the most likely risk in such a library is data infiltration. This event has a probability of occurring only once a year. The impact is still light. So that the mitigation carried out by the library is to take direct action when the risk occurs. Apart from data infiltration, the biggest potential risk impact is when a power outage occurs. Even though the frequency of power outages occurs once a year, the impact is quite severe. Besides being able to paralyze library services, library digital data also has the potential to be damaged. The damage is caused by malware due to a sudden power surge.

D. Evaluating Risk

This stage is a follow-up to risk mitigation. The recommendation reference chart is as follows:

RELIABILITY	Eliminate	PROTECTION
	Substitution	
	Engineering	
	Administration	

Figure 3 Risk Control

Based on Figure 3 above, there are 4 types of risk control evaluation, namely elimination, substitution, engineering, and administration. The four types of recommendations depend on the impact of each risk. The following is an elaboration of risk control recommendations for the Surabaya city library:

- a. *Eliminate*; This recommendation directs to avoid the risks that will arise immediately. The source of the risk of implementing IT in the Surabaya City Library is related to data security. To avoid data theft, infiltration, hacking and cracking, this study provides recommendations for data access protocols in every service process. This protocol is used as a basis or reference for providing services related to important library data. The access protocol is also used as a Standard Operating Procedure for each data access activity. This is very important to avoid the risk of infiltration from unwanted parties. The use of Hypertext Transfer Protocol (HTTP) in the Surabaya city library information system is no longer sufficient to avoid data infiltration. So that the use of Hypertext Transfer Protocol Secure (HTTPS) is the minimum choice to protect library data. The HTTPS protocol has higher security compared to HTTP. As the name implies, HTTPS is a more secure

- protocol. This protocol will protect the integrity, confidentiality and security of data between site users and computers. So it's better to use HTTPS protocol not just HTTP to protect library user data. The recommendation for using the HTTPS protocol also refers to research results (GlÄVan et al., 2020; Madasu, 2015) which reveal the fact that the HTTPS protocol is more widely used as a standard protocol to protect the confidentiality of internet site user data.
- b. *Substitution*; One of the risks faced by the Surabaya City Library is the systematic risk as a force majeure. The risk is when the electricity goes out which can paralyze digital-based services. The recommendation of this research is to substitute for backup electrical power in the form of a Generator Set (Genset). The generator will be useful to replace electric power if at any time there is a power outage. Using a generator set as a backup power source would make more sense than just waiting for the power source to turn back on. So it's time for the library to think about investing in a generator set as a backup source of electrical energy. Of course, the generator set investment must also be considered and the resulting cost benefits calculated. The cost benefit analysis of the generator set investment can use the time value of money and Return on Investment (RoI) models. Accurate calculation and analysis of these investments will make library performance much more efficient and effective. The recommendation to use a generator set as a backup energy source refers to research (Costa & Villalva, 2020; Ezema,

2019; Vempere et al., 2021) which reveals that the use of alternative energy as a backup source of electricity can help efficiency and avoid the systematic risk of scarcity of electrical energy.

The model for calculating the time value of money from the generator set investment refers to the Future Value formula. The calculation is by multiplying the present value by the interest factor, namely $(1+r)$ to the power of n . The number 1 is the given unit, while r is the set annual rate or appreciation value. Meanwhile n is the compounding period of the investment. Calculating RoI from generator set investment using the RoI calculation method. The calculation is the total income minus the initial capital then divided by the initial capital. Because the library is a non-profit organization, the calculation refers to the output of intangible service performance and then makes a scale to be nosed quantitatively. The results are then compared with the conditions before applying the generator set. The resulting output is in the form of qualitative recommendations, no longer a quantitative number. This is because the library is a non-profit organization with a core business of service.

- c. *Engineering*; infiltration, hacking, and cracking are still the scourge of IT implementation risks. So this study recommends the existence of a protocol in every data access. The protocol will save every change, deletion, system login in a log history. In addition, implementing two times data authentication per login can avoid data theft caused by infiltration.

Every activity related to the information system will be recorded in a history log. The activity record is used as activity tracking material when the system experiences problems due to infiltration. Even though the library information system already uses the HTTPS protocol, there is still the potential for data breaches. In this condition, it is usually done by an insider who has login access to the system. So recording system login activities is a form of mitigating the risk of data breaches originating from insiders.

- d. *Administration*; One of the obstacles that are often faced by library services is service procedures. This can be trimmed by implementing IT in every library business process.

The application of a library information system is one of the most efficient alternatives to cut service procedures. The application of IT to library information systems is also to avoid human error in every service. This human error is related to the level of work endurance of library staff. This administrative recommendation supports research conducted by (Gotovac et al., 2020; Sharma & Rawal, 2021) which reveals that the application of IT in every service will minimize the risk of human error. Especially if the service industry that. Given requires a high level of precision. So that the application of IT in the service sector is one of the alternative recommendations for risk mitigation.

E. Implementation of Risk Management

The application of risk management at the Surabaya City Library refers to the recommendation table for the matrix representation table. Surabaya City

Library's IT position is in direct action. So the most rational application that can be done in this case is elimination and engineering. The application of this technique of elimination and engineering refers to the probability or possibility of a risk occurring to the security of Library data. Library data theft can be eliminated by implementing protocols in every library service business process. Access to important library data must go through two authentications to ensure that access does not originate from infiltration. Engineering begins with building business process flows related to the input process output. The flow is then translated in the form of additional applications as an inseparable part of the IT library itself.

There are risks that are certain, such as business failure, where the risk is a risk that has a probability of 50 percent. The problem is that we don't know when this risk will befall our business unit. In general, the risks that we usually face are the risk of business loss, force majeure, technical risks so that services cannot be provided. There are four ways to manage library risk, namely: Risk Awareness; Assess; Treat; Monitor
Being aware of risk is the beginning of all these processes. A company leader must have a high awareness of the risks of the company he leads. This awareness is related to the ability to fully understand that risks must be managed properly. This risk awareness continues up to the assessment of the level of risk to be managed.

Meanwhile, the risk assessment is adjusted to the nature and characteristics of the risk itself. For example, when assessing the risk of a building fire, you can use a physical

audit in your assessment. The same is true when assessing business risk. Business risk requires more detailed research and analysis. The risks that occurred in the past are used as the basis for analysis to find out the causes. This cause can occur due to poor performance, management negligence, or other reasons.

Several assessment techniques are commonly used by companies in assessing risk. However, the most commonly used are audits and measurements. measurement in the assessment stage and allows the corporate president to conduct analysis and make decisions. After this stage is completed, the company will determine the priority scale of corporate steps. So that corporations can identify which hazards or indicators can provide greater risk.

The next step is the treatment of those risks. Several aspects of risk treatment are avoid, minimize, spread, accept. Avoided risks are risks that can have a major impact on a company/corporation. Risks that can be minimized if these risks can be reduced by increasing controls. Risk can also be transferred or diversified. The usual practice is to do outsourcing, hedging, and insurance.

The final step in the risk management stage is monitoring or monitoring. This step is accompanied by a repair audit to ensure operational procedures have been carried out properly.

The next step is to provide feedback on the results of the risk analysis. This response is the determination of the company's attitude towards the risks that will be experienced. Some of the responses or determination of attitudes from the results of the analysis are as follows:

Risk avoidance, this attitude is to stop all activities that can pose a potential risk. In other words, the company tries to avoid all activities that are unprofitable and potentially risky.

Risk sharing or transfer, this action is usually called hedging or outsourcing. The company will transfer the risk to other parties using certain mutually beneficial schemes.

Risk reduction, this action is usually used by companies that do not avoid risk, and will still face it. One way is to reduce the impact caused. Reducing the impact caused by this is done by implementing internal controls within the company.

Risk acceptance, this action is almost the same as point 3, but in this phase the company takes risks without taking any action to reduce or overcome the impact it causes.

CONCLUSION

The application of IT in the Surabaya City Library has a cost benefit for the organization. The benefit obtained from the application of Information Technology is the efficiency of library business processes in the field of user services. The application of IT can also increase the productivity of the library. But on the other hand there are risks faced by the library. Various risks can arise both from within the library and from outside the library. The risk from inside the library is the potential for insider infiltration. Meanwhile, the potential threat from outside the library is an attempt to break into data from users outside the library.

Various risks can arise both from within the library and from outside the library. The risk from inside the library is the potential for insider infiltration. Meanwhile, the potential threat from outside the library is

an attempt to break into data from users outside the library.

The most common risk faced by user service providers is data security problems. This is exacerbated when library human resources do not/do not have literacy related to IT risk mitigation. This study provides recommendations for mitigating the risk of implementing IT in the library, whether caused by force majeure or interference from outside the library.

Risk mitigation to anticipate force majeure at the Surabaya city library is by investing in generator sets. This is an effort to prevent damage to hardware and software when blackouts and power surges occur. Generator set investment also considers cost benefits by using a time value of money calculation model to calculate RoI.

The results of the study provide recommendations in the form of elimination of any potential risks arising from outside the library in the form of infiltration, hacking, and cracking data. In addition, other recommendations given in this study are engineering as a form of elimination support. Both are realized in the form of a data access protocol with two authentications to ensure data security from attempted theft.

Elimination at the recommendation stage is related to the application of the HTTPS protocol which is more secure than the usual HTTP protocol. The protocol recommendations refer to the impact of risks arising in the event of data infiltration. Elimination at the recommendation stage is related to the application of the HTTPS protocol which is more secure than the usual HTTP protocol. The protocol recommendations refer to the impact of risks arising in the event of data infiltration. The limitation of this research lies in the object of research where the data from the

object of research is still small when compared to IT data on public services. In addition, the probability or possibility of the occurrence of risk is still light, only 1 (one) time in a year. The recommendation for further research is that this risk management model or application can be used for service organizations with larger data, for example Information Technology applications in the population service agency where the potential risk is greater than the library entity.

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