DESIGN OF APPLICATION INFORMATION SECURITY
SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP
CASE STUDY: DISKOMINFO KABUPATEN KAMPAR

TUGAS AKHIR

Diajukan Sebagai Salah Satu Syarat
untuk Memperoleh Gelar Sarjana Komputer pada
Program Studi Sistem Informasi

Oleh:

FAHMI RIFAI
11950311549

FAKULTAS SAINS DAN TEKNOLOGI
UNIVERSITAS ISLAM NEGERI SULTAN SYARIF KASIM RIAU
PEKANBARU
2023

LEMBAR PERSETUJUAN

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TUGAS AKHIR

Oleh:

FAHMI RIFAI
11950311549

Telah diperiksa dan disetujui sebagai Laporan Tugas Akhir
di Pekanbaru, pada tanggal 19 Juni 2023

Ketua Program Studi

Eki Saputra, S.Kom., M.Kom.
NIP. 198307162011011008

Pembimbing

Muhammad Jazman, S.Kom., M.InfoSys.
NIP. 198206042015031004

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LEMBAR PENGESAHAN

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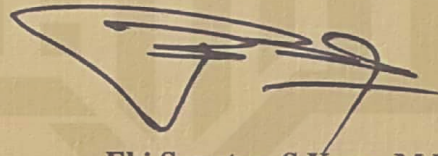
Oleh:

FAHMI RIFAI
11950311549

Telah dipertahankan di depan sidang dewan penguji
sebagai salah satu syarat untuk memperoleh gelar Sarjana Komputer
Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau
di Pekanbaru, pada tanggal 06 Juni 2023

Pekanbaru, 06 Juni 2023
Mengesahkan,

Dekan | Ketua Program Studi

Dr. Hartono, M.Pd. | Eki Saputra, S.Kom., M.Kom.
NIP. 196403011992031003 | NIP. 198307162011011008
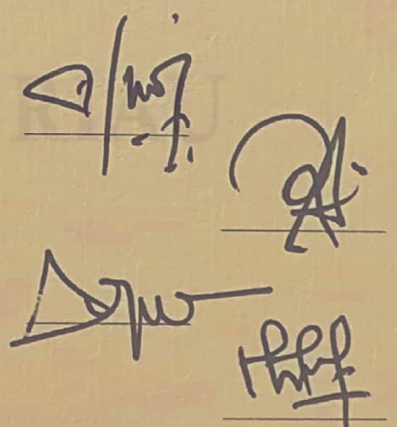
DEWAN PENGUJI:

Ketua   : Arif Marsal, Lc., MA.

Sekretaris   : Muhammad Jazman, S.Kom., M.InfoSys.

Anggota 1   : Dr. Angraini, S.Kom., M.Eng.

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NIM. 11950311549

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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيمِ

Dengan menyebut nama Allah yang maha pengasih lagi maha penyayang

Assalamu'alaikum Warahmatullahi Wabarakatuh

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Pekanbaru, 19 Juni 2023
Penulis,

FAHMI RIFAI
NIM. 11950311549

Lampiran Surat :

Nomor   : Nomor 25/2021

Tanggal : 10 September 2021

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Saya yang bertandatangan di bawah ini :

Nama   :   FAHMI RIFAI

NIM   :   11950311549

Tempat/ Tgl. Lahir   :   DABO SINGKEP , 20 DESEMBER 2000

Fakultas/~~Pascasarjana~~ :   SAINS DAN TEKNOLOGI

Prodi   :   SISTEM INFORMASI

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DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR

Penulis
1. Fahmi Rifai
2. Muhammad Jazman
3. Angraini
4. Megawati

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DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR

Fahmi Rifai[*1], Muhammad Jazman[2], Angraini[3], Megawati[4]

[1,2,3,4]Program Studi Sistem Informasi, Fakultas Sains dan Teknologi, Universitas Islam Negeri Sultan Syarif Kasim Riau, Indonesia
Email: [1]11950311549@students.uin-suska.ac.id, [2]jazman@uin-suska.ac.id, [3]angraini@uin-suska.ac.id, [4]megawati@uin-suska.ac.id

Abstract

Information security includes the issues that may threaten accountability, reliability, trustworthiness, privacy, authenticity, and trustworthiness of information in an agency. Data and information are very risky things in Information Security, and therefore it is important to do information security governance. The process of evaluating information security using the Index KAMI and ISO 27001: 2013 will be carried out in this study by recording data using Microsoft Excel which has been provided by the National Cyber and Crypto Agency (BSSN). To make it easier to conduct information security assessments and simplify the Excel display, Visual Basic for Applications (VBA) will be utilized as a medium for adding ISO 27001: 2013, then it will be connected using MSXML2.XMLHTTP. The results of the self-assessment carried out show that the Communication, Information, and Signaling Service of Kampar Regency has a level of completeness in implementing the ISO 27001 standard at the "Inadequate" level with a score of 151 only reaching level I+. Meanwhile, the results of the ISO 27001: 2013 Annex control evaluation show that there are still clauses that have not been fulfilled. Therefore, the Communication, Informatics, and Coding Office of Kampar Regency urgently needs improvement in order to fulfill the clauses of ISO 27001: 2013.

Keywords: *Index KAMI, ISO 27001:2013, VBA, MSXML2.XMLHTTP, Information security, self-assessment*

PERANCANGAN APLIKASI KEAMANAN INFORMASI SELF-ASSESSMENT MENGGUNAKAN VBA DAN MSXML2.XMLHTTP (CASE STUDI : DISKOMINFO KABUPATEN KAMPAR)

Abstrak

Keamanan informasi mencakup isu-isu yang dapat mengancam akuntabilitas, keandalan, ketidaktergajaran, privasi, otentikasi dan kepercayaan informasi pada suatu instansi. Data dan Informasi ialah hal sangat berisiko dalam keamanan informasi, oleh karena itu perlu dilakuakan tata kelola keamanan informasi. Proses evaluasi keamanan informasi menggunakan Indeks KAMI dan ISO 27001:2013 akan dilakukan pada penelitian ini dengan perekapan data menggunakan Microsoft Excel yang telah di sediakan oleh Badan Siber dan Sandi Negara (BSSN). Untuk mempermudah melakukan *assessments* keamanan informasi dan menyederhanakan tampilan excel akan dimanfaatkan *Visual Basic for Appliacation* (VBA) sebagai media penambahan ISO 27001:2013, kemudian akan dikoneksikan menggunakan MSXML2.XMLHTTP. Hasil *self-assessment* yang dilakukan menunjukkan Dinas Komunikasi, Informatika, dan Persandian Kabupaten Kampar tingkat kelengkapan penerapan standar ISO 27001 berada pada level "Tidak Layak" dengan skor 151 hanya mencapai tingkat I+. Sedangkan untuk hasil evaluasi kontrol *Annex* ISO 27001:2013 menunjukkan bahwa masih terdapat klausa-klausa yang belum terpenuhi. Oleh karena itu Dinas Komunikasi, Informatika, dan Persandian Kabupaten Kampar sangat membutuhkan perbaikan agar dapat terpenuhinya klausa-klausa ISO 27001:2013.

Kata kunci: Indeks KAMI, ISO 27001:2013, VBA, MSXML2.XMLHTTP, Keamanan informasi, *self-assessment*

1. INTRODUCTION

Security is very important in information technology governance to reduce the occurrence of

threats to assets which include confidentiality, integrity, and availability[1],[2]. Information security aims to reduce business failures, ensure business continuity, and optimize return on investment[3],[4]. Three fundamental components of information security must be maintained: Confidentiality of important information from unauthorized parties. Integration of the information that ensures its accuracy and completeness; and Accessibility of critical services and information for authorized use whenever necessary. This includes issues that may threaten accountability, reliability, trust, privacy, authentication, and confidence in information.[3]

The management of information, especially personal data, is the right and responsibility of public and private data providers and data controllers in managing personal data[5],[6]. If there is an incident of a personal data breach, there will be an investigation of the personal data provider under the Personal Data Protection Bill (RUU PDP). Where in the RUU PDP four important elements discussed which consisted of data owners, data users, data flows, and data security. The existence of the RUU PDP is expected to be able to resolve all problems regarding public data leaks [7],[8].

Data and information are very at risk in the field of information security, therefore it is necessary to carry out information security governance where there are various frameworks that can be used including ISO 27001, ISO 27002, COSO, COBIT, ITIL and others. For now, the most suitable for application in the development of information security processes is SNI ISO / IEC 27001: 2013 [3],[9],[10].

ISO 27001 is a framework for the use of information technology and the management of assets that help organizations ensure that information security is implemented effectively. [11]. The international standard ISO / IEC 27001 is used to define, implement, operate, supervise, review, maintain and improve information security management system (ISMS) policies and documents based on organizational needs. ISO/IEC 27001:2013 defines 14 Main Clauses, and 114 controls[1].

There is a policy that has been established, as information security should be managed. The policy is the Minister of Communication and Information Technology Regulation No 4 of 2016 concerning Information Security Management System[12]. In this regulation, it is stated that two types of guidelines can be used to secure information, namely, the SNI ISO/IEC 27001 standard or the Information Security Index (KAMI) framework prepared by the National Cyber and Crypto Agency (BSSN)[13],[14].

The information security evaluation process uses the US Index and ISO 27001: 2013 with data recording using Microsoft Excel as a tool. To make it easier to assess information security using ISO 27001: 2013 on the Indeks KAMI Excel file that has been provided by the National Cyber and Crypto Agency (BSSN), it will utilize Visual Basic for Applications (VBA) Custom UI as a medium for adding ISO 27001: 2013.

Visual Basic for Application (VBA) is a programming language created by Microsoft and can be used to enhance the capabilities of Office applications, including Ms. Office Excel. By the use of VBA integrated with Microsoft Excel so that data can be recapitulated automatically, then later will be connected using MSXML2.XMLHTTP.

Based on the background described above, this research was carried out by designing the Information Security Self-Assessment application with a case study of the Communication, Informatics, and Coding Office of Kampar Regency using VBA custom UI and MSXML2.XMLHTTP to know the extent of information security readiness and maturity at the Communication, Informatics, and Coding Office of Kampar Regency to get ISO 27001: 2013 Certification and also provide a numerous of recommendations for improving information security management based on ISO 27001: 2013 which can be applied at the Communication, Informatics, and Coding Office of Kampar Regency.

2. RESEARCH METHODOLOGY

This research was conducted at the Communication, Informatics, and Coding Office of Kampar Regency. The subject of research was the Electronic Based Government System (SPBE) and the object of research was self-assessment using the Index KAMI and ISO 27001: 2013 as for the stages of this research can be seen in Figure 1.
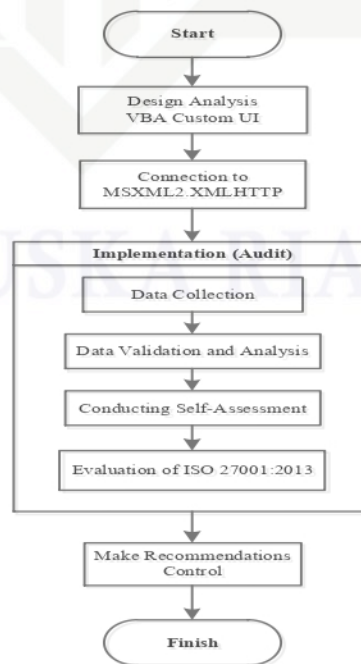

Figure 1 Methodology

The following is an explanation of the research methodology carried out: (1) Performing Analysis and Design of the VBA Ribbon using the Custom UI Editor to simplify the appearance of the KAMI Index Excel and add a ribbon to carry out evaluations using ISO 27001:2013. (2) Making a connection to MSXML2.XMLHTTP which later Excel will be integrated directly into HTTP which can be accessed. (3) Conduct an Information Security Audit in which several stages are carried out at this stage such as data collection in the form of agency risk and asset data, then Data Validation and Analysis carried out to carry out a Checklist which aims to ensure the data provided is following its original state, then conducts a Self-Assessment Information security uses the KAMI Index, then the results of the KAMI Index assessment are then compared with the completeness of the controls in ISO 27001:2013. (4) Make recommendations, after evaluating ISO 27001:2013 it is known that there are deficiencies in the institution so the authors make recommendations based on the completeness of ISO 27001:2013 controls.

2.1. Information Security

Information security is maintaining the confidentiality, integrity, and availability of information[13]. Information security, according to ISO/IEC 27002 (2005), is the Protection of information from any type of threat that aims at ensuring business continuity, risk minimization, and the maximization of return on investment, and business opportunities. [11]. According to the Ministry of Communication and Information Technology (2008), Information security is a branch of information technology study that can be used to determine techniques and methods in protecting information and information systems related to access rights, use, destruction, change, distribution, and destruction without legal authority. The information security types are classified into the following sections: Physical security, Personal security, Operational security, Communication security, and Network security [11].

2.2. Indeks KAMI
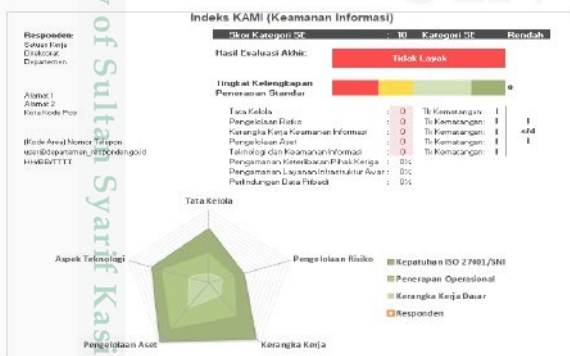
Figure 2 Indeks KAMI

The information security index KAMI is a tool to evaluate and analyze the level of readiness or maturity of the Information Security Management System (ISMS) [15] which will provide the results in the form of a description of the readiness condition (completeness and maturity) of the information security framework to agency leaders then [16]. The Indeks KAMI framework has several parts including electronic system evaluation, governance, risk, framework, asset management, technology, and supplements[17],[18]. In addition, to evaluate the Index KAMI, it can also analyze the similarity with aspects of the guidelines in the SNI ISO 27001: 2013 standard[19],[20].

2.3. SNI ISO/IEC 27001:2013

The International Organization for Standardization(ISO)/*International Electrotechnical Commission*(IEC) 27001 is a framework that provides guidelines for implementing an Information Security Management System (ISMS) [20]–[22] which can be used to make organizational policies, by taking the first step of identifying risks and examining the implementation that has been implemented, and used to determine, implement, operate, supervise, review, maintain and improve information security management system (ISMS) policies and documents based on organizational needs [10],[20],[23].

The ISO 27001: 2013 standard contains clauses that need to be fulfilled to organize a good Information Security Management System (ISMS) [23]. SNI ISO / IEC 27001: 2013 has two parts, namely the PDCA (Plan - Do - Check - Act) section and the Annex Control section. The Control Annex of ISO 27001: 2013 has 14 clauses, security controls, 35 control objectives, and 114 controls for assessment [4],[13]. The correlation between the Index KAMI and ISO 27001: 2013 can be seen in Figure 3, the areas used in the Index KAMI to evaluate or measure the level of control objectives in ISO 27001: 2013 into 5 evaluation areas [24].

Figure 3 The relationship between ISO 27001 and Indeks KAMI

2.4. *Visual Basic for Applications* (VBA)

Microsoft Visual Basic for Applications (VBA) is a derivative of the Visual Basic programming language developed by Microsoft and released in 1993. VBA is the result of an integrated combination of the programming environment (Visual Basic Editor) with a programming language (Visual Basic) that enables users to design and build Visual Basic programs in the main Microsoft Office application [25], as well as certain applications. VBA is designed to perform several tasks, such as creating alternative specifications of an application such as Microsoft Office or Microsoft Visual Studio [26],[27].

2.5. MSXML2.XMLHTTP

MSXML2.XMLHTTP was first introduced by Microsoft ActiveX in Microsoft Internet Explorer 5 as a control. The way MSXML2.XMLHTTP works to send and receive Hyper Text Transfer Protocol (HTTP) requests that are asynchronous and imprecise. HTTP asynchronously and imprecisely to the Web server, which responds with XML. Responses can be manipulated with scripts from the client or transformed with Extensible Stylesheet Language Transformation (XSLT). MSXML2.XMLHTTP makes it also a possibility to build responsive Web applications that don't need to refresh entire pages to display new data. MSXML2.XMLHTTP works by sending requests to a Web server from a client and returning XML data from the client [28].

3.   RESULTS AND DISCUSSIONS

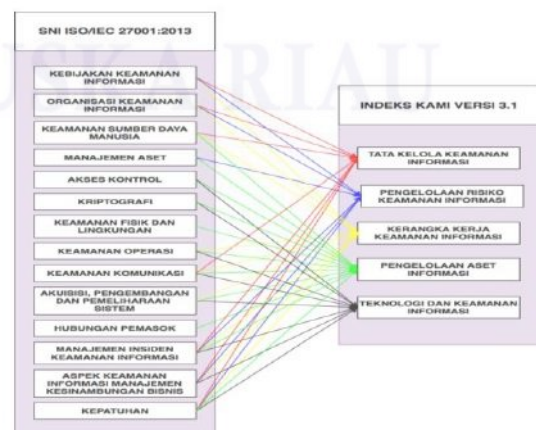The Office, Communication, Information, and Signage of Kampar Regency have used the Indeks KAMI on electronic systems. The assessment used in index KAMI is an application for analyzing and evaluating the level of readiness (completeness and maturity) of information security implementation and measuring the success of implementation improvement ideas, with the achievement of completeness and maturity levels at the Department of Communication, Informatics and Coding of Kampar Regency.

The list of assets in the Communication, Informatics, and Coding Office of Kampar Regency, where assets are divided into several categories, namely hardware, data, websites, networks, facilities, and human resources. The list of assets at the Communication, Informatics, and Coding Office of Kampar Regency can be seen in Table 1. Meanwhile, risk identification is carried out to find out the threats that might occur later at the Communication, Informatics, and Coding Office of the Kampar Regency. The list of risks at the Communication, Informatics, and Coding Office of Kampar Regency can be seen in Table 2.

Table 1 List of Assets

No	Facilities/Facilities	Amount	Information
1	Building Office	1	Borrow Use
2	Room Work Head Service	1	
3	Room Work Special Secretary/Head of Department	5	
4	Room Work Special Head of Subdivision/Head of Section	1	Not enough 11 room
5	Room Meeting	0	
6	Room BPIM	0	Superimposed in room staff
7	Room Media Center	0	
8	Room servers	0	Superimposed in room staff
9	Vehicle Wheel Four	3	Borrow use
10	Vehicle Wheel Two	0	
11	Computer (PC)	15	
12	Laptops	2	
13	Notebooks	11	
14	Projector	2	
15	Screen Screen	0	
16	Telephone	0	
17	Television	5	
28	Network Internet	320 Mbps	
29	HR	68 People	33 civil servants and 35 non-civil servants

Table 2 List of Risks

No	Asset	Risk
1	hardware	Physical damage to assets
		Full memory
		Virus Attack
2	Data	Data Theft
3	Network	Network Unstable/Network Disconnection

3.1. VBA Ribbon Custom UI Design

VBA is an object-oriented programming language from Microsoft that is mainly used with applications such as Microsoft Excel, Microsoft Word, and Microsoft PowerPoint in nowadays. Microsoft Excel is a data processing application with worksheets in the form of a spreadsheet or worksheet program. The use of VBA in Microsoft Excel is done to add ribbon features. The coding example of making an Excel Ribbon Using the Custom UI Editor is seen in Figure 4.

Figure 4 VBA Ribbon Coding

The display of the VBA Ribbon coding results is in Figure 5 for the results of the Index KAMI VBA Ribbon design.

Figure 5 VBA Ribbon of Index KAMI

The addition of custom ribbons in the Index KAMI section, namely Index KAMI Version 4.0, Change Record, Risk Security Governance, Asset Management Framework, Technology, Supplements, Respondent Identity, SE Category, and Dashboard. The custom ribbon can be seen in the Figure 6.

Figure 6 Custom Ribbons in the Index KAMI

Figure 7 for the results of the ISO 27001: 2013 VBA Ribbon design.

Figure 7 VBA Ribbon of ISO 27001:2013

The addition of a custom ribbon in the ISO 27001: 2013 section contains the ISO 27001: 2013 clauses menu and the results of the clause completeness assessment in the form of the Assessment Results menu. The custom ribbon can be seen in the Figure 8.

Figure 8 Custom Ribbon in the ISO 27001: 2013

3.2. Applying MSXML2.XMLHTTP

After the custom ribbon is created on the Excel file, a connection will be applied to MSXML2.XMLHTTP. The use of MSXML2.XMLHTTP will perform HTTP Requests in VBA which will provide additional capabilities to Excel. An HTTP request can be used to interact with web services, APIs, or even websites, making it easier for users to access the Excel file. The coding of the HTTP request in Excel VBA can be seen in the figure 9.

Figure 9 The MSXML2.XMLHTTP coding

3.3. Implementing Self-Assessment and Conformance to ISO 27001:2013 Standards

The data collection process is carried out using observation, interviews, and filling out the Index KAMI questionnaire by correspondents from the Communication, Informatics, and Coding Office of Kampar Regency who have duties and responsibilities based on the areas in the Index KAMI questions, then calculating the results of the questionnaire and analyzing and evaluating the level of completeness and maturity of information security using Index KAMI version 4.0. The results of the analysis are then assessed against the ISO 27001: 2013 Standard. After making a comparison, a recommendation process can be carried out, namely providing input on deficiencies that have not been carried out by the Communication, Informatics, and Coding Office of the Kampar Regency.

A. Evaluation Using the Indeks KAMI

Measurement of 5 information security areas shows the measurement results of parts I, II, III, IV, and V that the maturity level of information security at the Communication, Informatics, and Coding Office of Kampar Regency is at level 1 and 1+, namely Not Feasible. The description of the maturity level of the five areas that have been assessed can be seen in Table 3.

Table 3 Results of Measurement of Maturity Levels in 5 Areas of Information Security

	Gover nance	Risk Mana gement	Frame work	Asset Mana gement	Techno logy Aspect
		Maturity Level II			
Status	I+	No	No	I+	I+
		Maturity Level III			
validity	No	No	No	No	No
Status	No	No	No	No	No
		Maturity Level IV			
validity	No	No	No	No	No
Status	No	No	No	No	No
		Maturity Level V			
validity	No	No	No	No	No
Status	No	No	No	No	No

	Gover nance	Risk Mana gement	Frame work	Asset Mana gement	Techno logy Aspect
Final Status	I+	I	I	I+	I+

The order of maturity levels from lowest to highest is I-V. The minimum limit that must be achieved to carry out ISO certification is III +, while for now the maturity level at the Communication, Informatics, and Coding Office of Kampar Regency is only limited to I-I +. The maturity level shows that the position of the Communication, Information, and Coding Office of Kampar Regency is as follows:

➢ Level I - Initial Conditions
➢ Level II - Basic Framework Implementation
➢ Level III - Defined and Consistent
➢ Level IV - Managed and Measured
➢ Level V - Optimal

From the description above, it can be seen that the level of maturity at the Communication, Information, and Sign Language Office of Kampar Regency is in the I - I + range, which means it is still in its initial condition. While the Dashboard of the evaluation results of the information security area and the radar chart of the level of completeness of the SNI / IEC 27001 standard can be seen in Figure 10.
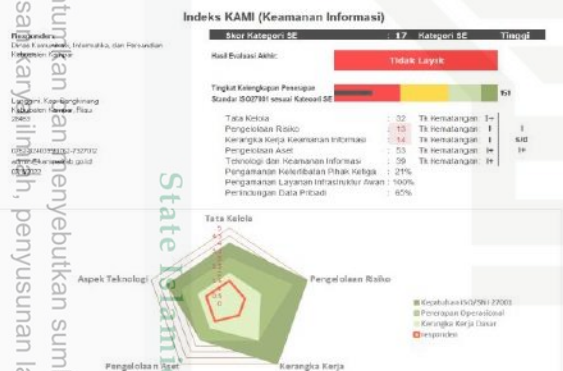
Figure 10 Results of Radar Diagram of the Completeness Level of Information Security Areas

Figure 10 shows that the category level of electronic systems used by the Communication, Informatics, and Coding Office of Kampar Regency is in a high category, with a score of 17. Meanwhile, the level of completeness of the application of the ISO 27001 standard is at the "Inappropriate" level with a score level of 151 only reaching the I + level, this shows that the high level of dependence on Communication, Informatics, and Coding Office of Kampar Regency on electronic systems is not supported by adequate information security. Therefore, based on the results of the evaluation of the Index KAMI, the Communication, Informatics and Coding Office of Kampar Regency is in dire need an improvement.

B. Assessment of Conformance to ISO 27001:2013 Standard

The results of the Indeks KAMI analysis are then assessed for conformity to the ISO 27001: 2013 standard which aims to understand the condition of the information security management system regarding those managed by the Communication, Informatics, and Coding Office of Kampar Regency. The following are the results of the assessment of the suitability of the condition of the information security management system owned by the Communication, Informatics, and Coding Office of Kampar Regency against the ISO 27001: 2013 Standard.

Table 4 Conformance to ISO 27001: 2013 Standard

Area in Standard	Condition	Fulfillment	Conformity Level
A.5 Information Security Policy	2	0	0%
A.6 Information Security Organization	7	5	71%
A.7 Security of Human Resources	6	3	50%
A.8 Asset Management	10	5	50%
A.9 Access Control	14	11	79%
A.10 Cryptography	2	0	0%
A.11 Physical and Environmental Security	15	6	40%
A.12 Operational Security	14	5	36%
A.13 Communication Security	7	3	43%
A.14 System Acquisition, Development and Maintenance	13	2	15%
A.15 Relations with Suppliers	5	1	20%
A.16 Information Security Incident Management	7	2	29%
A.17 Aspects of Information Security in Business Continuity Management	4	1	25%
A.18 Compliance	8	1	13%

Table 4 shows that the results of the assessment using the ISO 27001: 2013 Annex Control show that there are still clauses that have not been fulfilled. Therefore, recommendations will be given in concerning the risk analysis carried out previously, with the recommendations made so that the clauses

of ISO 27001: 2013 can be fulfilled to minimize unacceptable information security risks and improve the quality and ability to manage the Information Security Management System.

3.4. Recommendations

From the results of the evaluation of Indeks KAMI, some values are not sufficient to be certified by SNI ISO / IEC 27001: 2013, therefore researchers will make recommendations for the Communication, Informatics, and Coding Office of Kampar Regency, which in the future, these recommendations will be a reference for making security governance documents to improve information technology security at the Communication, Informatics, and Coding Office of Kampar Regency. The recommendations given are based on the SNI ISO / IEC 27001: 2013 standard, which is carried out by looking at the deficiencies that exist in each area and comparing them with the ISO 27001: 2013 Annex controls relating to that area. The following table presented seberal recommendations from each area sorted according to priority based on the lowest to the highest score obtained for each area.

Table 5 Recommendations for Information Security Governance Areas

No	At the moment	Recommendation	ISO 27001:2013 clause
1	Not yet There is definition standard competence and expertise in implementing information security management	Create competency standard documents/procedures and expertise of SMKI implementers	A.7.2.2
2	There are no applicable requirements/standards related to competency and expertise in implementing information security	Make policies related to competency standards/requirements and expertise of information security implementers	A.7.2.3
3	Information security needs/requirements have not been integrated into the work process	Perform integration related to information security needs	A.7.3.1

Table 5 shows the recommendations given for the information security governance area where ISO 27001: 2013 clauses A.7.2.2, A.7.2.3, and A.7.3.1 are still not fulfilled at the Communication, Informatics and Coding Office of Kampar Regency so that it is necessary to fulfill the clauses in order to achieve ISO 27001: 2013 standardization.

Table 6 Recommendations for Information Security Risk Management Areas

No	At the moment	Recommendation	ISO 27001:2013 clause
1	Not yet set of policies, work programs and deep framework information security	Create documents and framework policies for information security risk management	A.16.1.6 A.8.2.1
2	There is no person in charge of mitigation and supervision of the completion of risk mitigation measures on a regular basis to ensure work progress	Define as well allocate roles and information security responsibility, and make periodic reports so that they can plan for the continuation of mitigation measures	A.16.1.1 A.16.1.2 A.16.1.7 A.16.1.6

Table 6 shows the recommendations given for the Information Security Risk Management Areas where ISO 27001: 2013 clauses A.16.1.6, A.8.2.1, A.16.1.1, A.16.1.2, A.16.1.7, and A.16.1.6 are still not fulfilled at the Communication, Informatics and Coding Office of Kampar Regency so that it is necessary to fulfill the clauses in order to achieve ISO 27001: 2013 standardization.

Table 7 Recommendations for Information Security Management Framework

No	At the moment	Recommendation	ISO 27001:2013 clause
1	Not published yet policy, information security	Advise information security policies	A.5.1.1
2	There is no mechanism for managing information security documents	Create an information security document management policy	A.18.2.2
3	Haven't done yet condition identification which is harmful information security	Do an assessment and decisions about information security incidenti	A.6.1.4
4	Haven't checked yet against audits performed on instance	Make requirements and control activities audits carried out	A.12.7.1
5	Haven't implemented the process yet system development secure (Secure SDLC)	Create policies device development secure software	A.14.2.1
6	Don't have a framework yet management work continuity planning ICT	Make a plan security sustainability information	A.17.1.1 A.17.1.2

No	At the moment	Recommendation	ISO 27001:2013 clause
7	(business continuity planning) services None _ Routine activities For evaluate level obedience security information that already set	Set continuity information security	A.17.1.3

Table 7 shows the recommendations given for the Information Security Management Framework where ISO 27001: 2013 clauses A.5.1.1, A.18.2.2, A.6.1.4, A.12.7.1, A.14.2.1, A.17.1.1, A.17.1.2 and A.17.1.3 are still not fulfilled at the Communication, Informatics and Coding Office of Kampar Regency so that it is necessary to fulfill the clauses in order to achieve ISO 27001: 2013 standardization.

Table 8 Recommendations for Information Asset Management

No	At the moment	Recommendation	ISO 27001:2013 clause
1	The classification of assets has not yet been defined according to the laws and regulations	Create asset documents	A.8.2.1
2	There has been no consistent change in system management	Make consistent management changes to systems, business processes and technology processes	A.12.1.2
3	There isn't any yet regulation security and asset protection relevant agencies RIGHT	Create procedure according to related intellectual property rights	A.18.1.2
4	no storage space designed for disaster risk management	Creating a room equipped with fire detection, temperature and other supporting facilities	A.11.1.4
5	There is no decision yet regarding data exchange with external parties and security	Make a deal regarding the transfer of information	A.13.2.2
6	No regulations yet device security agency	Implement security of outside equipment and	A.11.2.6

No	At the moment	Recommendation	ISO 27001:2013 clause
	computing used outside official work location	assets location	
7	Process not yet available For manage allocations entry key (physical and electronic) to a physical facility	Perform login control	A.11.1.2
8	Process not yet available to check (inspection) And care for: device computers and facilities supporters	Do the process equipment maintenance	A.11.2.4

Table 8 shows the recommendations given for the Information Asset Management where ISO 27001: 2013 clauses A.8.2.1, A.12.1.2, A.18.1.2, A.11.1.4, A.13.2.2, A.11.2.6, A.11.1.2 and A.11.2.4 are still not fulfilled at the Communication, Informatics and Coding Office of Kampar Regency so that it is necessary to fulfill the clauses in order to achieve ISO 27001: 2013 standardization.

Table 9 Recommendations for Information Technology and Security

No	At the moment	Recommendation	ISO 27001:2013 clause
1	no compliance with the implementation of the configuration	access control policy regarding configuration system security must be implemented	A.13.1.1
2	The availability of network infrastructure is not yet available as needed	Perform network infrastructure design as needed	A.17.2.1
3	Network infrastructure, systems and applications are not yet available according to sufficient capacity	Make a network infrastructure design according to the required capacity	A.14.1.1 A.14.1.3
4	Don't have a standard yet For script	Create policies about use cryptographic control	A.10.1.1
5	Haven't implemented yet security for manage	Perform management key	A.10.1.2

No	At the moment	Recommendation	ISO 27001:2013 clause
6	encryption keys System not yet supported password change automatically	Doing management password	A.9.4.3
7	No results recorded yet antivirus updates and virus attack report which was followed up	Execute control against malware	A.12.2.1
8	Every existing application Not yet have specifications and its security function verified/validated	Perform analysis and requirement specifications information security	A.14.1.1
9	B yet to secure development environment and trials	Implement environment safe development	A.14.2.6

Table 9 shows the recommendations given for the Information Technology and Security where ISO 27001: 2013 clauses A.13.1.1, A.17.2.1, A.14.1.1, A.14.1.3, A.10.1.1, A.10.1.2, A.9.4.3, A.12.2.1, A.14.1.1 and A.14.2.6 are still not fulfilled at the Communication, Informatics and Coding Office of Kampar Regency so that it is necessary to fulfill the clauses in order to achieve ISO 27001: 2013 standardization.

4. DISCUSSION

Several studies have evaluated information security using the Index KAMI and ISO 27001: 2013. Based on established policies, information security should be managed. The policy is the Minister of Communication and Information Technology Regulation No. 4 of 2016 concerning Information Security Management Systems. In this regulation, it is stated that two types of guidelines can be used to secure information, namely the SNI ISO/IEC 27001 standard or the Information Security Index (KAMI) framework prepared by the National Cyber and Crypto Agency (BSSN).

The ISO/IEC 27001 international standard is used to define, implement, operate, supervise, review, maintain, and improve, the formation of security management system (SMKI) policies and documents based on the needs of the organization (ISO/IEC 27001, 2013). Assessment using the Information Security Index (Index KAMI) is an application that is used as a tool to analyze, and evaluate the level of readiness (completeness and maturity) of information security implementation and measure the success of implemented improvement ideas, by achieving a certain level of completeness and maturity in an organization.

These studies only focus on evaluating the Index KAMI and then standardizing the fulfillment of ISO 27001: 2013. Where the Index KAMI evaluation tool is not intended to analyze the feasibility or effectiveness of existing forms of security, but rather as a tool to provide an overview of the state of readiness (completeness and maturity) of the information security framework to agency leaders. The Index KAMI can be used to evaluate the level of maturity, the level of completeness of the application of SNI ISO / IEC 27001 as well as a map of information system security governance areas in an agency and a comprehensive standard that assists institutions in achieving goals and generating value through effective information technology governance and management.

In this research, self-assessment is carried out using the Index KAMI and ISO 27001: 2013 to help an organization ensure that the information security implemented is effective so that it can provide recommendations based on the clauses of ISO 27001: 2013. The information security evaluation process uses the Index KAMI and ISO 27001: 2013 with Microsoft Excel data recording. To make it easier to assess information security using ISO 27001: 2013 on the Index KAMI Excel file, it will utilize Visual Basic for Applications (VBA) as a medium for adding ISO 27001: 2013. By using VBA which is integrated with Microsoft Excel so that data can be recapitulated automatically, it will be connected later using MSXML2.XMLHTTP. Meanwhile, previous research did not conduct a Conformity assessment of the ISO 27001: 2013 Standard, design the VBA Ribbon, and connect to MSXML2.XMLHTTP.

5. CONCLUSION

Designing a VBA ribbon using the Custom UI Editor can help Office applications create programs that automate repetitive processes and simplify the appearance of Excel. In addition, the use of MSXML2.XMLHTTP will perform an HTTP Request in VBA that will provide additional capabilities to Excel so that it is easier for users to access the Excel file.

The maturity level of information security at the Department of Communication, Informatics and Cybersecurity of Kampar Regency is at level 1 and 1+, namely Not Feasible with a score level of 151. Therefore, according to the evaluation results of the Index KAMI, the Communication, Informatics and Coding Office of Kampar Regency urgently needs improvement.

The condition of SPBE information security governance managed by the Department of Communication, Informatics and Coding of Kampar Regency is still very far from meeting the requirements of standard ISO 27001: 2013. This is evidenced by compliance which is still far from 100% and a risk profile that has not been mitigated.

The condition of information security governance proves the need for recommendations. Recommendations can be used for the improved quality of information security governance at the Communications, Informatics, and Coding Office of Kampar Regency.

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LAMPIRAN A
SURAT IZIN PENELITIAN

PEMERINTAH KABUPATEN KAMPAR
DINAS KOMUNIKASI, INFORMATIKA DAN PERSANDIAN

Jalan A. Yani No. 50 Bangkinang Kota (Kode Pos : 28412) Riau
Website https://kominfosandi.kamparkab.go.id   Email : diskominfo@kamparkab.go.id

Bangkinang Kota, 26 Oktober 2022

Nomor	: 800/Diskominfo-SET/1048		Kepada Yth.
Lampiran	: -		Dekan UIN Suska Riau
Hal	: Penerimaan Izin Riset/Pra Riset		di -
			Tempat

Bissmillahirrahmanirrahim,
Assalamualaikum Wr.Wb

Sehubungan dengan surat Dekan UIN Suska Riau nomor : B-9749/F.V/PP.00.9/2022 tanggal 19 Oktober 2022 ke Badan Kesbangpol Kampar nomor : 071/BKBP/2022/517 tanggal 24 Oktober 2022 tentang Rekomendasi Pelaksanaan Kegiatan Riset/Pra Riset dan Pengumpulan Data, pada prinsipnya kami tidak keberatan menerima mahasiswa tersebut untuk melaksanakan Kegiatan Riset/Pra Riset dan Pengumpulan Data di Dinas Komunikasi, Informatika Dan Persandian Kabupaten Kampar yang berlangsung selama 6 (enam) bulan terhitung mulai tanggal surat ini dikeluarkan. Adapun nama mahasiswa tersebut sebagai berikut:

Nama	:	Fahmi Rifai
NIM	:	11950311549
Fakultas	:	Sains dan Teknologi
Program Studi/Smt	:	Sistem Informasi/VII
Judul Penelitian	:	Perancangan Tata Kelola Keamanan Informasi Sistem Pemerintahan Berbasis Elektorin Menggunakan Standar ISO 27001:2013

Demikian disampaikan, atas kerjasama nya di ucapkan terimakasih.

Wassalamu'alaikum Wr.Wb

KEPALA DINAS KOMUNIKASI INFORMATIKA
DAN PERSANDIAN KABUAPTEN KAMPAR

YURICHO EFRIL, S.STP
NIP. 19820112002121001
Dokumen ini ditandatangani secara elektronik menggunakan
Sertifikat Elektronik yang diterbitkan oleh DiskominfoOke

Balai Sertifikasi Elektronik

LAMPIRAN B
REVISI REVIEWER

M Gmail

Fahmi Rifaii <fahmirifaii09@gmail.com>

[jutif] Editor Decision
1 pesan

Yogiek Indra Kurniawan <jutif.ft@unsoed.ac.id>   12 Mei 2023 pukul 05.52
Kepada: Fahmi Rifai <fahmirifaii09@gmail.com>

Fahmi Rifai:

We have reached a decision regarding your submission to Jurnal Teknik Informatika (Jutif), "DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR: PERANCANGAN APLIKASI KEAMANAN INFORMASI SELF-ASSESSMENT MENGGUNAKAN VBA DAN MSXML2.XMLHTTP (CASE STUDI : DISKOMINFO KABUPATEN KAMPAR)".

Our decision is: Revisions Required

In addition, several things to consider from the editor's side are as follows :
1. Please **FOLLOW** JUTIF's template. You can download it at
http://jutif.if.unsoed.ac.id/index.php/jurnal/about/submissions
after that, you can copy your paper into template.
2. Please use table and figure format according to JUTIF's Template. The resolution of figures must be clear, can be seen and **more than 300 dpi**. You can make it bigger into 1 column if necessary.
3. Every figure and table **MUST BE** cited and must be explained in paragraph, ex : "Research method can be seen in Figure 1", "Table 1 showed XYZ."
4. Section "Discussion" is **MANDATORY**. If your article did not contain Discussion, please add it.
5. **MINIMUM** references in JUTIF is 15 primary references (Journal/Conference) from 5 years latest. Please add reference if necessary. In JUTIF, Reference using IEEE format. Please adjust in your reference.
6. Please Correct the manuscript **according to the review** from the reviewer or editor. Comments from reviewers that need to be corrected for the manuscript has been moved at the bottom. Reviewers also give a file that need to be corrected. Please login into Online Journal Systems (OJS) Jurnal Teknik Informatika and download that file.
7. Please give mark the revised results on the revised manuscript sent with **YELLOW HIGHLIGHTS** to the corrected sentence or sentences added of revision fulfillment from the Reviewer.
8. Revisions can be sent via the "File upload" in the "revision" section of the JUTIF's OJS with **maximum 3 weeks** after this email is sent. Please when upload the Revised File, do not overwrite the previous revised file.

Thank You.

Yogiek Indra Kurniawan
Informatics, Universitas Jenderal Soedirman
Phone 085640661444
yogiek@unsoed.ac.id

Reviewer A:
Recommendation: Revisions Required

Title

    The title is good because it already contains information related to research objectives, methods and research objects so that it is easy to understand the contents of the article through the title.

Abstract

    At the beginning of the abstract, it is necessary to clarify the problems that make this research important to do. Besides that, the objectives, methods and results of the research have been clearly stated.

Introduction

In the introduction, it has conveyed the background of the problem and the purpose that led to this research being carried out, but it is necessary to clarify why this research is important in the case of the object of this research.

Method

The research method section includes the research stages and research methods used in this study.

Results

The research results have been presented clearly and supported by pictures and tables so that they are easy to understand.

Discussions

In this article there is no specific section that explains the in-depth discussion of the results of the research that has been done, so it is necessary to add a comparison of the results of similar studies to this research so that the updates can be seen.

Conclusion

The conclusions are clearly stated.

References

The bibliography is well written.

Overall Comment

Overall, the research results have been presented well, but some suggestions need to be added to make this research even better, thank you.

_____

_____

Reviewer B:
Recommendation: Revisions Required

_____

Title

The title is good, because it contains indicative information on research objects, methods and research objectives

Abstract

The abstract is good, because it already contains problems, research objectives, methods and research results.

Introduction

The Introduction and Background are good, because they present the problem or the importance of the research, and contain a search of previous research supported by a sufficient number of references (at least 15 references).

Method

The method is sufficient, because it includes the stages in the research and the methods used.

Suggestion :
- Please refer to figures 1 and 2 in the description provided
- Please describe the method, preferably presenting a description of the stages of the research carried out

conceptually where the method used is described according to the stages carried out, so that the results of applying the method at each of these stages are presented in the Results section (Description 2.1 – 2.5, please insert a description of the stages of the research according to the figure 1)

Results

The results are sufficient, because they present research data and are described in full. Figures and tables have been placed properly but have not been referred to and have not been given an explanation.

Suggestion :
- Figure 9, Figure 10, and Table 4, 5, 6, 7, 8, 9 please refer to and provide an explanation/description

Discussions

Discussion is lacking, because there is no discussion and discussion section yet, where this section presents the author's opinion and compares the results of research carried out with other similar studies.

Suggestion :
- Please create a Discussion section which presents the author's opinion and compares the results of the research carried out with other similar studies.

Conclusion

The conclusion is good, because it concludes the things that are presented and discussed in the Results section.

References

The bibliography is good, because the minimum number of citations is 15 with 80% of the citations coming from journals/seminars in the last 5 years.

Suggestion :
- Bibliography must be written in IEEE style

Overall Comment

In general the article is good, but it needs to be revised according to suggestions

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Jurnal Teknik Informatika (Jutif)

LAMPIRAN C
EMAIL ACCEPTED

M Gmail

Fahmi Rifaii <fahmirifaii09@gmail.com>

[jutif] Editor Decision
2 pesan

Yogiek Indra Kurniawan <jutif.ft@unsoed.ac.id>   16 Mei 2023 pukul 23.30
Kepada: Fahmi Rifai <fahmirifaii09@gmail.com>

Dear Dr/Mr/Ms. Fahmi Rifai,

We are glad to inform you that your submission with the title "DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR: PERANCANGAN APLIKASI KEAMANAN INFORMASI SELF-ASSESSMENT MENGGUNAKAN VBA DAN MSXML2.XMLHTTP (CASE STUDI : DISKOMINFO KABUPATEN KAMPAR)" **HAS BEEN ACCEPTED** for publication in Jurnal Teknik Informatika (Jutif).

For available slot and update, you can track in this page : **https://bit.ly/UpdateJutif**

For further information/questions, please contact 085640661444.

Thank you for the contribution you have made.
We encourage you to submit your other research results to Jurnal Teknik Informatika (Jutif) in the future.

Thank you for your contribution.

Yogiek Indra Kurniawan
Informatics, Universitas Jenderal Soedirman
Phone 085640661444
yogiek@unsoed.ac.id

Jurnal Teknik Informatika (Jutif)

Yogiek Indra Kurniawan <jutif.ft@unsoed.ac.id>   16 Mei 2023 pukul 23.31
Kepada: Fahmi Rifai <fahmirifaii09@gmail.com>

Fahmi Rifai:

The editing of your submission, "DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR: PERANCANGAN APLIKASI KEAMANAN INFORMASI SELF-ASSESSMENT MENGGUNAKAN VBA DAN MSXML2.XMLHTTP (CASE STUDI : DISKOMINFO KABUPATEN KAMPAR)," is complete. We are now sending it to production.

Submission URL: https://jutif.if.unsoed.ac.id/index.php/jurnal/authorDashboard/submission/1033

Yogiek Indra Kurniawan
Informatics, Universitas Jenderal Soedirman
Phone 085640661444
yogiek@unsoed.ac.id

[Kutipan teks disembunyikan]

DAFTAR RIWAYAT HIDUP

Fahmi Rifai lahir di Dabo Singkep, pada tanggal 20 Desember 2000. Peneliti merupakan anak dari Bapak Novri Dianto dan Ibu Sumarni. Peneliti merupakan anak pertama dari dua bersaudara, yang mana Aura Saskiya Diani adalah adek kandung Peneliti satu-satunya. Pada tahun 2006 peneliti memulai pendidikan dengan masuk TK Sinar Bahagia di Seri Kuala Lobam, Bintan dan lulus pada tahun 2007. Lalu melanjutkan pendidikan Sekolah Dasar di SDN 006 Seri Kuala Lobam selama 2 tahun dan pindah ke SDN 004 Salo, Kabupaten Kampar. Peneliti menyelesaikan pendidikan Sekolah Dasar pada tahun 2013. Setelah menyelesaikan pendidikan Sekolah Dasar, Peneliti melanjutkan pendidikan di SMPN 1 Bangkinang Kota. Kemudian, setelah 3 tahun menyelesaikan pendidikan di SMPN 1 Bangkinang Kota, pada tahun 2016 Peneliti melanjutkan pendidikan di SMKN 1 Bangkinang Kota dengan mengambil jurusan Teknik Komputer Jaringan. Setelah menyelesaikan pendidikan di SMKN 1 Bangkinang Kota, Peneliti pun melanjutkan pendidikan dengan mendaftar ke beberapa Universitas yang ada di Indonesia. Singkat cerita, pada tahun 2019 itu Peneliti diterima menjadi mahasiswa Program Studi Sistem Informasi Fakultas Sains dan Teknologi Universitas Islam Negeri Sultan Syarif Kasim Riau melalui jalur Mandiri. Selama menjadi mahasiswa, Peneliti mencoba aktif diberbagai kegiatan kampus terutama kegiatan yang ada di Profi Sistem Informasi ini. Peneliti juga tergabung dalam Himpunan Mahasiswa Sistem Informasi (HIMASI) pada periode 2022/2023 sebagai Ketua Himpunan. Selain itu Peneliti juga tergabung sebagai penerima program Beasiswa Baznas Satu Keluarga Satu Sarjana dari semester 3 hingga peneliti menulis Tugas Akhir ini. Akhir kata peneliti mengucapkan rasa syukur yang tak terhingga serta ribuan terimakasih atas bantuan dari seluruh pihak yang terkait sehingga selesainya Tugas Akhir ini yang berjudul *"DESIGN OF APPLICATION INFORMATION SECURITY SELF-ASSESSMENT USING VBA AND MSXML2.XMLHTTP CASE STUDY: DISKOMINFO KABUPATEN KAMPAR"*.