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Encrypted Email for Local Government Information Security in South Sumatra

Ratu Mutialela Caropeboka, Januar Effendi, Isna Wijayani*, & Rahma Santhi Zinaida

Postgraduate Program of Bina Darma University Palembang, Seberang Ulu I District, Palembang City, South Sumatra, 30111, Indonesia

Abstract

This study obtains an overview of the conditions of the encryption email management workflow among local governments in South Sumatra. The workflow for managing email encryption for regular official news has been going very well. Meanwhile, the workflow for managing encryption of emails for confidential news is still experiencing problems, especially for local governments that do not have cipher expert personnel and official cipher equipment from the BSSN. In addition, this study also illustrates that the application of information security theory in the use of encrypted emails for confidential news between local governments in South Sumatra is not optimal. The main obstacle faced is that there are still local governments that do not have cipher expert personnel and official cipher equipment from the BSSN. The quality of the workflow is measured by looking at the fulfillment of the main elements contained in the Standard Operating Procedures (SOP) of the encryption email management workflow. The quality of using email encryption for information security is carried out by analyzing the fulfillment of the elements contained in the information security theory.

Keywords: Information Security; encrypted email; cipher expert human resource; official encryption equipment

1. Introduction

As a form of effort to provide guarantees for the security of state information, the Government of the Republic of Indonesia established the National Cyber and Crypto Agency (BSSN). Furthermore, through Law number 23 of 2014 concerning regional government, a mandate was given to all regional governments (PEMDA) in the form of the obligation to implement encryption for information security. Based on Perka Lemsaneg number 1 of 2014, a task force was formed in the form of an Encryption Technical Unit (UTP) whose task was to carry out the function of providing encryption services in government agencies (Ridwan et al., 2020; St-Hilaire, 2021). Among the encryption services for information security is the provision of encrypted e-mails in communications between regional governments. There are still a number of problems in terms of administering local government encrypted e-mails in South Sumatra (Sumsel).

Regarding threats to information security, (Khairi, 2018) expressed his opinion, that in the midst of limited cipher human resources owned by regional governments and limited capabilities in managing classified information, encrypted communication has the potential to assist in the process of securing information and public service functions provided by regional governments to the community. Priority in information security is based on several potential threats in the form of interruption, interception, modification and fabrication. Reflecting on the ciphering communication activities along with their potential vulnerabilities (Ardipandanto & Budiman, 2018; Pamungkas & Khalida, 2019), coding is intended to create anti-denial of information, maintain information authentication, fulfill information availability, maintain the integrity and confidentiality of information (Leyland & Anthony, 2016; Lidster & Rahman, 2018) .

(Budiman, 2016) explains that the practice of encrypted communication in local governments cannot be implemented evenly in quality. The types of risks and threats that dominate the management of cryptography in the regions are related to the limited human resources (HR) qualified as cipher experts and the local government's ability to determine classified information (Riinawati, 2021; Sedarmayanti, 2018). Encryption management in regional governments will improve data security and assist local government functions in carrying out public service functions (Choi et al., 2018; Simamora, 2021), against threats in the form of interruptions, interceptions, modifications, and fabrication of data and

* Corresponding author.
E-mail address: isnawijayani@binadarma.ac.id

information. Coding arrangements in local governments include regulating cryptography management issues both at the central and regional levels, coordinating coding, determining classified information.

This study aims to analyze the workflow mechanism for managing encrypted e-mails in communication between local governments in South Sumatra. The second objective is to analyze the efforts of the South Sumatra Provincial Government together with the district/city governments under them in optimizing the use of encrypted e-mail.

2. Method

2.1. Information Security

The theory that is used as the basis for this research is the theory of information security. One of the experts who expressed his opinion about information security (Al-Shehri & Clarke, 2012; Suherman, 2017; Zulfia et al., 2019), Information security is the protection of information and its critical elements, including systems and hardware that use, store and transmit information (Bisaso, 2022; Hwang et al., 2021; Whitman & Mattord, 2021) explain that there are important elements of information security, namely:

1) Availability: guarantees that information is always available without hindrance whenever it is needed in the required format.
2) Accuracy: is said to be accurate if it is free from errors or errors and has the value expected by the end user.
3) Authenticity: the condition and quality of information that is guaranteed to be genuine, and not the result of engineering, re-products or counterfeit products (fabrication).
4) Confidentiality: an element of information security that guarantees that information can only be accessed by authorized parties.
5) Integrity: an element of information security that guarantees that the quality, integrity and completeness of information is always maintained according to the original data from the original source.
6) Usability (Utility): a situation where information has value if it can serve a desired purpose.
7) Ownership: the quality or status of ownership or control of information one says one has if one obtains it, regardless of its format or other characteristics. While a breach of confidentiality always results in a breach of property, a breach of ownership does not always result in a breach of confidentiality (Rahardjo, 2017).

2.2. In Depth Study Technique

The method used in this study is a qualitative research method with in-depth study techniques (Eppich et al., 2019; Mulyadi, 2016). Researchers involve themselves and interact directly with personnel providing coding services. The research was carried out from February 2021 to April 2022 by observing the communication of sending and receiving news between UTP regional governments in South Sumatra using encrypted emails. The equipment used is Password Equipment (Palsan) in the form of a password laptop along with supporting equipment and a distribution key system from BSSN. Regional governments that do not yet have Palsan from BSSN, use common office devices such as laptops that support encryption services with limited functionality. Supporting equipment that is also very important is a special room where coding activities are held.

The objects observed were information security activities using encrypted e-mail between local governments in South Sumatra which were carried out by the UTP of each local government totaling 18 units. Using a purposive sampling technique, the authors select and specifically determine a sample of 5 UTPs along with informants or sources of information, with the following composition:

1) UTP Personnel of the Provincial Communication and Information OfficeSumsel totaled 7 people.
2) UT personnelP represents the element in charge/manager of UTP from 2 district governments and 2 city governments, totaling 4 people.

The table 1 describes the details of the criteria for sources of information. This determination of informants is guided by Regulation of the Head of the National Crypto Agency number 5 of 2017. This Regulation of the Head of the National Crypto Agency provides guidelines for the classification of the capacity of each personnel involved in providing encryption services.

Table 1. Information source criteria

No.	Information Resources Position	Role in Encryption Function
1.	Head of South Sumatra Communication and Information	Person in charge of coding security
2.	Secretary of South Sumatra Kominfo Office	Supporting coding
3.	Head of Information and Communication Technology, and Coding of South Sumatra Kominfo	Person in charge of coding security
4.	Head of South Sumatra Kominfo Coding Section	Person in charge of coding security / Level II cipher expert
5.	Section Head of Information Technology Infrastructure	Supporting coding
6.	Section Head of Data Integration and Information Security	Supporting coding
7.	State Civil Apparatus of South Sumatra Kominfo UTP	Custodian / Level I Cryptographer
8.	District / city UTP management element	Person in charge / Kasa Officer
9.	District / city UTP management element	Person in charge / Clerk
10.	District / city UTP management element	Person in charge / Screen Officer
11.	District / city UTP management element	Person in charge / Custodian

3. Result and Discussion

3.1. Key Elements in the Encryption Email Service Management Workflow

An encrypted email called a Sanapati email is used to perform services in terms of:

1) receipt of ordinary official news
2) delivery of regular official news
3) reception of classified news
4) classified news delivery

The difference in management standards between ordinary official news and classified news can be seen from the Table 2.

Table 2. Differences in encrypted email management for ordinary official news and confidential news

Difference	Regular News	Secret News
Management officer	It can be done by non-encryption personnel	Should be carried out by personnel skilled cipher
Computer hardware	Can use normal office computer	Must wear a fake from BSSN
Security system	E-mail security based on state security system without encryption process	There is security strengthening using a special lock system
Delivery of news to recipients	Print out from Sanpati's e-mail, sent with normal service standards	Coded e-mail translation, sent in a special way for classified news
Storage	Digital files are collected in regular folders, and physical documents are stored according to normal official standards	Digital files are stored in encrypted folders, and physical documents in a safe in the strong room

There are main elements and sub-elements that must be met so that the workflow for managing e-mail encryption can be carried out properly. Based on the type, news received or sent via encrypted e-mail can be classified into two (Rosalin et al., 2022; Sya'bany, 2015), namely ordinary official news and classified news. The Table 2 describes the main elements that should have in a cipher email management workflow.

Table 3. Key elements of a encryption email management workflow

News Type	Element	Sub Elements
Regular service news	1. Cash officer	1. Headgauze
		2. Member of kasa/ Sandiman transmission
		3. Member of the editorial / Sandiman administration
	2. Place / equipment / equipment	4. TKS
		5. Computer hardware
		6. Physical document storage
		7. Digital document storage
		8. Scanner device (scanner)
		9. Incoming news agenda book
		10. Agenda out
		11. Expedition book / receipt
		12. Disposition sheet
		13. Gauze stamp
		14. Printing devices / printers
		15. SOPs guide
Secret news	Cash officer	1. Headgauze
		2. Member of kasa/ Sandiman transmission
		3. Password operator/ Encoder password
		4. Member of the editorial / Sandiman administration
	Place / equipment / equipment	5. TKS
		6. Computer hardware
		7. Password lock system
		8. Physical document storage
		9. Lock system storage
		10. Digital document storage
		11. Scanner device (scanner)
		12. Incoming news agenda book
		13. Agenda out
		14. Expedition book / receipt
		15. Disposition sheet
		16. Stampgauze
		17. Printing devices / printers
		18. SOPs guide

3.2. Encryption Email Management Workflow Assessment

An assessment of the workflow of managing email cipherslocal governmentin South Sumatra can be described as follows:

1) Encryption email management workflow for regular business news:

Assessment of the workflow of ordinary official news management local government in South Sumatra illustrated through the Table 4.

The workflow of local government coding email management in South Sumatra for regular official news is categorized as EXCELLENT. The total score obtained was 124 out of a maximum score of 150 or with a score percentage achievement of 83%.

The percentage score of all UTPs of the Office of Communication and Information, namely the South Sumatra Provincial Government 90%, Palembang City 83%, Prabumulih City 77%, OKU Regency 87%, and OKI Regency 77%, is categorized as very good. This is because all local governments have carried out management according to

Operational Standards and Procedures (SOP) and have most of the elements needed.

Table 4. Email encryption management workflow assessment category for ordinary official news

No.	Sub elements	Total score of UTP 5 Pemda (percentage)
1.	Headgauze	8 (80%)
2.	Member of transmission gauze/Sandiman	8 (80%)
3.	Member of the editorial / Sandiman administration	6 (60%)
4.	TKS	6 (60%)
5.	Computer hardware	6 (60%)
6.	Physical document storage	5 (50%)
7.	Digital document storage	5 (50%)
8.	Scanner device (scanner)	10 (100%)
9.	Incoming news agenda book	10 100%)
10.	Agenda out	10 (100%)
11.	Expedition book / receipt	10 100%)
12.	Disposition sheet	10 100%)
13.	Stampgauze	10 (100%)
14.	Printing devices / printers	10 (100%)
15.	SOPs guide	10 (100%)
Total (Maximum score 150)		124 (83%)
Category		Very good

2) Encryption email management workflow for classified news:

Assessment of confidential news management workflowlocal governmentinSouth Sumatraillustrated through the Table 5.

Table 5. Encryption email management workflow assessment category for classified news

No.	Sub elements	Total score of UTP 5 Pemda (percentage)
1.	Headgauze	8 (80%)
2.	Member of transmission gauze/Sandiman	5 (50%)
3.	Operator Password/ Encoder Password	5 (50%)
4.	Member of the editorial / Sandiman administration	3 (30%)
5.	TKS	6 (60%)
6.	Computer hardware	3 (30%)
7.	Password Lock System	6 (60%)
8.	Physical document storage	6 (60%)
9.	Password Lock system storage	4 (40%)
10.	Digital document storage	4 (40%)
11.	Scanner device (scanner)	10 (100%)
12.	Incoming news agenda book	6 60%)
13.	Agenda out	6 (60%)
14.	Expedition book / receipt	6 (60%)
15.	Disposition sheet	6 (60%)
16.	Stampgauze	10 (100%)
17.	Printing devices / printers	10 (100%)
18.	SOPs guide	6 (60%)
Total (Maximum score 180)		110 (61%)
Category		Well

The workflow of local government coding email management in South Sumatra for confidential news is categorized as GOOD. The total score obtained amounted to 110 out of a maximum score of 180 or with a percentage score achievement of 61%. There is a striking difference in terms of the acquisition of the percentage score and category of the entire UTP of the Office of Communication and Information of each regional government. The UTP score of the

Office of Communication and Information of the South Sumatra Provincial Government is 94%, Palembang City is 81%, and OKU Regency is 81% and has entered the excellent category. On the other hand, the UTP score of the Office of Communication and Information of Prabumulih City is 25% and OKI Regency is 25% still in the bad category.

In general, the workflow of local government coding email management in South Sumatra for confidential news is categorized as good. However, it turns out that there are still two regional governments that are still in the bad category, namely the UTP of the Prabumulih City Communication and Information Office and OKI Regency. It is still found that the workflow of coding email management for confidential news cannot be fully implemented in accordance with the provisions. Local governments that do not have cipher expert personnel and forgers such as the Prabumulih City Government and OKI Regency cannot implement coding email governance for sending and receiving confidential news. The limitation of palsan and the absence of cipher expert personnel are quite principle issues in terms of the independence of organizing special coding functions. Another issue related to this workflow mechanism is that there are still many local governments that do not have TKS as a place to organize coding services. Only the South Sumatra provincial government's UTP has a TKS in accordance with the Regulation of the Head of the State Cryptography Agency Number 10 of 2010 concerning TKS Standards.

3.3. Application of Information Security Theory in Utilizing Encrypted Emails

This paper uses the theoretical basis of information security according to (Bryan, 2020; Whitman & Mattord, 2021). The application of the 7 elements of information security in interpersonal communication local governmentin South Sumatra, can be explained as follows:

1) Elements of Availability:

Implementation of Availability elements in managing encrypted emails local government in South Sumatra described in the Table 6.

Table 6. Category of assessment of the application of Availability elements

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	recording of ordinary official news	10 (100%)
2.	secret news record	6 (60%)
3.	storage of ordinary official news documents	10 (100%)
4.	secret news physical document storage	4 (40%)
5.	regular official news digital file storage	10 (100%)
6.	secret news digital file storage	4 (40%)
7.	password lock system storage	4 (40%)
Number (maximum score 70)		48 (69%)
Category		good

The implementation of the availability element in the management of regional government coding email in South Sumatra is categorized as GOOD. The score obtained is 48 out of a maximum score of 70 or with a percentage score of 69%. There is a striking difference in terms of the acquisition of the percentage score and category of the entire UTP of the Office of Communication and Information of each regional government. The UTP score of the Office of Communication and Information of the South Sumatra Provincial Government is 100%, Palembang City is 79%, and OKU Regency is 79%, which has entered a very good category. on the other hand, the UTP score of the Office of Communication and Information of Prabumulih City is 43% and OKI Regency is 43% which is still categorized as not good enough.

All local governments have implemented a good standard system for managing regular news... Regions that do not yet have cipher expert personnel and do not yet have special forgeries (Prabumulih City and OKI Regency), are still vulnerable to information security threats, because:

- There is no mechanism for recording confidential news;
- There is no mechanism for storing physical documents of classified news;
- There is no mechanism for storing digital files of confidential news;
- There is no mechanism for storing the cipher key system.

2) Elements of Accuracy:

Application of Accuracy elements in managing encrypted emails local government in South Sumatra described in the Table 7.

Table 7. Assessment of the application of the element of Accuracy (Accuracy)

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	receiver accuracy	10 (100%)
2.	time accuracy	10 (100%)
3.	accuracy of the format and content of the news	10 (100%)
4.	classified news protection	6 (60%)
5.	equipment for ordinary official news	6 (60%)
6.	equipment for classified news	3 (30%)
7.	regular official news manager	10 (100%)
8.	classified news manager	6 (60%)
total (maximum score 80)		61 (76%)
category		Very good

The application of the Accuracy element in the management of regional government coding emails in South Sumatra is categorized as VERY GOOD. The total score is 61 out of a maximum score of 80 or with a score percentage achievement of 76%.

The percentage of UTP scores of the Office of Communication and Information of the South Sumatra Provincial Government is 100%, Palembang City is 88%, and OKU Regency is 81%, which has entered a very good category. While the Prabumulih City Government 56% and OKI Regency 56%, are in the good category. The percentage scores of the Prabumulih City Government and OKI Regency are only slightly above the poor category, due to limitations in managing confidential news.

The guarantee that the news is accurately received by the intended party is indicated by the existence of an SOP which ensures that the news must only be received by the destination party by affixing a receipt. The accuracy of the delivery time of the news is very good, because until now the encryption service has never been late for its destination and has never received any complaints. The content or content of the news received by the destination party is also guaranteed to be as accurate as the original news because before it is sent, the news has received the signature of the sending official. in stages. Apart from that, the accuracy value is good, because the encrypted email is managed by officers specifically.

3) Elements of Authenticity:

Application of Authenticity elements in managing encrypted emails local government in South Sumatra described in the Table 8.

Table 8. Assessment of the application of the element of Authenticity (Authenticity)

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	receiver accuracy	10 (100%)
2.	time accuracy	6 (60%)
3.	accuracy of the format and content of the news	6 (60%)
4.	classified news protection	3 (30%)
5.	equipment for ordinary official news	10 (100%)
6.	equipment for classified news	6 (60%)
Number (maximum score 60)		41 (68%)
Category		Well

The application of the Authenticity element in the management of regional government coding emails in South Sumatra is categorized as GOOD. The total score obtained was 41 out of a maximum score of 60 or with a percentage score of 68%.

There are varying differences in terms of the acquisition of the percentage score and category of the entire UTP of the Office of Communication and Information of each regional government. The UTP score of the Office of

Communication and Information of the South Sumatra Provincial Government is 100% and the Palembang City is 83% categorized as very good. The UTP score of the Office of Communication and Information of OKU Regency is 75%, categorized as good. Meanwhile, the UTP score of the Office of Communication and Information of Prabumulih City is 42% and OKI Regency is 42% which is still in the poor category.

Guarantee that the news received by the destination party is the same as the original news, because there is a gradual affixing of the signature of the sending official. Coded news gets additional protection so that there are no more loopholes for changes by unauthorized parties. This additional protection cannot be done independently bylocal governmentwho do not yet have cipher and counterfeit expert personnel (Prabumulih City and OKI Regency).

4) Elements of Confidentiality :

Application of the element of Confidentiality in managing encrypted emails local government in South Sumatra described in the Table 9.

Table 9. Assessment of the application of the element of Confidentiality

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	receiver accuracy	10 (100%)
2.	accuracy of the format and content of the news	10 (100%)
3.	classified news protection	6 (60%)
4.	storage of ordinary official news documents	10 (100%)
5.	secret news physical document storage	4 (40%)
6.	regular official news digital file storage	10 (100%)
7.	Secret news digital file storage	4 (40%)
8.	Password lock system storage	4 (40%)
9.	equipment for ordinary official news	6 (60%)
10.	equipment for classified news	3 (30%)
11.	regular official news manager	10 (100%)
12.	secret news manager	6 (60%)
13	threat mitigation/anticipation system	10 (100%)
14.	TKS	6 (60%)
total (maximum score 140)		99 (71%)
category		Well

The implementation of the Confidentiality element in the management of regional government coding emails in South Sumatra is categorized as GOOD. The total score obtained was 99 out of a maximum score of 140 or with a percentage score of 71%.

There are varied differences in terms of obtaining the percentage of scores and categories of all UTP Kominfo services for each local government. The UTP score for the Kominfo Service, the Provincial Government of South Sumatra, is 100% and Palembang City is 79%, in the very good category. The UTP score of the OKU Regency Kominfo Service is 75% in the good category. While the UTP score for the Ministry of Communication and Informatics for Prabumulih City was 50% and OKI Regency 50%, they were still in the unfavorable category.

Guarantee of the implementation of the element of Confidentiality in managing encrypted emailslocal governmentinSouth Sumatraindicated by the following:

- There is a mechanism that ensures that news is only given or received by the party to whom the news is intended;
- Encrypted e-mail as the main medium for sending and receiving news, uses computer equipment and systems that are directly guaranteed by the state. For confidential news, additional security is obtained in the form of an encryption process. Encrypted news can only be created and translated by officers who have access rights to the encryption key system;
- Encryption emails are managed by personnel qualified as cipher experts, namely UTP of the Communication and Informatics Office of the South Sumatra Provincial Government, 2 people from Palembang City, and 3 people from OKU Regency;
- There is a storage system for secret news using special encryption tools and systems;
- There is a TKS which is a special place for coding activities. Even though only the TKS at the UTP of the South Sumatra Provincial Communication and Informatics Service had approached the specified standard.

The things that are still a weakness in the implementation of the element of Confidentiality in managing encrypted emailslocal governmentinSouth Sumatra, that is:

- There is still UTPlocal governmentwho do not have cipher and fake experts (Prabumulih City and OKI Regency), so that the management of classified news is constrained;
- Only the UTP of the South Sumatra Provincial Communication and Information Service has TKS close to the specified standard. UTPlocal governmentothers are still managing password email management using a typical office workspace.

5) Elements of Integrity :

Implementation of integrity elements in managing encrypted emails local government in South Sumatra described in the Table 10.

Table 10. Assessment of the application of elements of integrity (Integrity)

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	storage of ordinary official news documents	10 (100%)
2.	secret news physical document storage	4 (40%)
3.	regular official news digital file storage	10 (100%)
4.	Secret news digital file storage	4 (40%)
5.	password lock system storage	4 (40%)
6.	receiver accuracy	10 (100%)
7.	accuracy of the format and content of the news	10 (100%)
8.	classified news protection	6 (60%)
9.	equipment for ordinary official news	6 (60%)
10.	equipment for classified news	3 (30%)
11.	regular official news manager	10 (100%)
12.	classified news manager	6 (60%)
total (maximum score 140)		83 (69%)
category		Well

The implementation of the Integrity element in the management of regional government coding emails in South Sumatra is categorized as GOOD. The total score obtained by 5 UTPs from provincial, district and city governments, amounted to 48 out of a maximum score of 70 or with a percentage score of 69%.

There are varied differences in terms of obtaining the percentage of scores and categories of all UTP Kominfo services for each local government. The UTP score for the Kominfo Service, the Provincial Government of South Sumatra, is 100% and Palembang City is 79%, in the very good category. The UTP score of the OKU Regency Kominfo Service is 75% in the good category. While the UTP score for the Ministry of Communication and Informatics for Prabumulih City was 46% and OKI Regency 46%, they were still in the unfavorable category.

Guarantee that the news received by the destination party is the same as the original news, both in terms of format and content, because the signature of the sending official is affixed in stages. For coded news, it gets additional protection so that there are no more loopholes for changes by unauthorized parties. This additional protection cannot be carried out independently by regions that do not yet have cipher and fake expert personnel (Prabumulih City and OKI Regency).

6) Elements of Usability (Utility):

Implementation of Utilities in managing encrypted emails local government in South Sumatra described in the Table 11.

The application of the Utility element in the management of regional government coding email in South Sumatra is categorized as GOOD. The scores obtained by 5 UTPs from provincial, district and city governments, totaled 147 out of a maximum score of 220 or with a percentage score of 67%. The percentage score of the UTP score of the Office of Communication and Information of the South Sumatra Provincial Government of 91% has been categorized as very good. While the percentage score of the UTP of the Office of Communication and Information of the Government of Palembang City 70%, Prabumulih City 52%, OKU Regency 68% and OKI Regency 52%, is categorized as good.

When looking at the aspects of accuracy of delivery time, accuracy of authenticity of news content, and accuracy of delivery to the recipient, it can be said that coding email is very useful for ensuring the security of information on official duties. The utilization of coding email for receiving ordinary official news is also very good. But for sending news, both ordinary official news and confidential news, it is almost not utilized. In the past 1 year, or throughout 2021, only the provincial government has been actively sending news. Other local governments almost never send news.

Table 11. Assessment of the application of the elements of Usability (Utility)

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	receiver accuracy	10 (100%)
2.	time accuracy	10 (100%)
3.	accuracy of the format and content of the news	10 (100%)
4.	classified news protection	6 (60%)
5.	incident	10 (100%)
6.	threat mitigation/anticipation system	10 (100%)
7.	storage of ordinary official news documents	10 (100%)
8.	secret news physical document storage	4 (40%)
9.	regular official news digital file storage	10 (100%)
10.	Secret news digital file storage	4 (40%)
11.	password lock system storage	4 (40%)
12.	receipt of regular official news for the last 1 year	10 (100%)
13	receipt of secret news of the last 1 year	0 (0%)
14.	Sending regular official news for the last 1 year	2 (20%)
15.	delivery of secret news of the last 1 year	0 (0%)
16.	equipment for ordinary official news	6 (60%)
17.	equipment for classified news	3 (30%)
18.	fund support	6 (60%)
19.	local regulations/policies	6 (60%)
20.	technical guidelines for regular official news	10 (100%)
21.	confidential news technical guidelines	6 (60%)
22.	reporting	10 (100%)
total (maximum score 220)		147 (67%)
category		Well

7) Elements of Ownership (Possession):

Implementation of the element of Ownership (Possession) in managing encrypted emails local government in South Sumatra described in the Table 12.

Table 12. Assessment of the application of the element of Ownership (Possession)

No.	Sub Elements	Total score of UTP 5 Pemda (percentage)
1.	receiver accuracy	10 (100%)
2.	accuracy of the format and content of the news	10 (100%)
3.	classified news protection	6 (60%)
4.	equipment for ordinary official news	6 (60%)
5.	equipment for classified news	3 (30%)
6.	incident	10 (100%)
number (maximum score 60)		45 (75%)
category		Well

The application of the element of Ownership (Possession) in the management of local government coding email in South Sumatra is categorized as GOOD. The total score obtained by 5 UTPs from the provincial, district, and city governments, amounted to 45 out of a maximum score of 60 or with a percentage score achievement of 75%. The percentage score obtained by the UTP of the Office of Communication and Information of the South Sumatra Provincial Government is 100% and the City of Palembang is 83%, which is categorized as very good. While the

percentage score of the Prabumulih City Government is 58%, OKU Regency at 75%, and OKI Regency at 58%, is in a good category.

The guarantee that the news received by the destination party is the same as the original news, both in terms of format and content or news content, because the signature of the sending official is affixed in stages. Guided by the SOP, it is ensured that the information is only received and known by the intended party, then it is obligatory to affix a receipt either physically or via email. Encrypted news receives additional protection so that there is no more room for changes to be made by unauthorized parties. This additional protection cannot be carried out independently by local governments that do not yet have password and forgery expert personnel (Prabumulih City and OKI Regency), so they still have vulnerabilities in the form of threats to information security.

4. Conclusion

There are still many local governments that have not been able to carry out coding services, especially coding email management for confidential news. The main problem is the lack of availability of cipher expert personnel. There are still local governments that do not have human resources who are cipher experts at all. Other obstacles include limited facilities, infrastructure, and operational funds to support the implementation of coding services. The coding email is only used to receive regular official news. Only the provincial government actively uses coding email for sending regular official news. The coding email service for receiving and sending confidential news in the last 1 year has never been utilized. This condition shows that threats to information security are still very open. For this reason, a stronger commitment from all local governments is needed so that coding for information security can be better implemented. Several things are suggested to strengthen the management of coding for information security. First, by fulfilling the requirements such as the availability of qualified human resources, facilities, and infrastructure support and coding operational funds. Second, by issuing regulations that emphasize the use of coding emails, especially in news communication, both of an ordinary official nature, especially those that are confidential.

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