Transitivity Analysis in Detecting Fraudulent Language in Email: Forensic Linguistics Approach

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Abstract

This research discusses the analysis of transitivity in detecting the fraudulent language in email fraud. The research purposes are (1) to identify the process types of transitivity systems in clauses used in email fraud, and (2) to explain how the fraudulent language is identified by using the transitivity system. This research is conducted descriptively. The documentation recording method is applied in collecting the data. Halliday's theory of Systemic Functional Linguistics, particularly the transitivity system is used to analyze the data. The research result is presented in the form of a table of process types and data interpretation. The data analysis resulted that the sender dominantly used material process to construe the fraudulent language by realizing the misleading statements. It is used to deceive and convince the email recipients by creating the false representation of important and powerful figures that influence the reader to believe the messages.

Keywords: email fraud, forensic linguistics, fraudulent language, process type, transitivity

1. INTRODUCTION

Email fraud is one of internet-based crime or cybercrimes that threaten Internet users by providing fraudulent information. It is a real-world problem as stated by Jones, et al (2019) that "email fraud is a huge real-world problem... whilst computer science approaches have predominantly tried to block malicious attacks before they reach the user, these can often only help in the short term" (p.1). To be able to identify a sort of fraud, prior knowledge about the types of email frauds is required.

However, only understanding the types of email frauds is not enough. A deep analysis of language features used in the email frauds is also necessary to conduct. Halliday and Matthiessen (1997) stated that "At this stage in history, we need a richer theory of grammar to meet the challenges of the age of information, e.g. in education and computation" (Halliday and Matthiessen, 1997, p. 1). For this reason, a linguist is needed to explain and to analyze language as evidence in the interest of criminal investigations. Analyzing a text that is implicated in a legal or criminal context is concerned with the field of forensic linguistics. According to McMenamin (2002),

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forensic linguistics is "the scientific study of language as applied to forensic purposes and contexts" (p. 22). Therefore, the analysis of language applications can help legal or criminal investigations.

Related to previous research, this research concerns how to detect the fraudulent language in an email fraud by analyzing the clauses using the Transitivity system of the processes, participants, and circumstances. In this research, the data was an email sent by random persons who claim to give money to the email recipient. The question is whenever someone sends email messages with fraudulent information, how does the writing style reveal traces of deception? How to detect email fraud by analyzing its language? What are linguistics forms that commonly used by a scammer? And is it even possible to detect?

It was conformable with Shuy who stated that "language leaves useful trace evidence that is perhaps more helpful and convincing than that of many of the crime reconstructions based on contextual visible circumstances" (Shuy, 2016, p.20). Analyzing fraudulent language in email fraud can trace evidence of fraud that helps to prevent the same kind of fraud in the future.

To understand the aims of this research, two objectives show the goal achieved in this research: (1) To identify the process types used in email fraud; (2) To explain the fraudulent language in email fraud identified by the process types.

2. REVIEW OF LITERATURE

Eggington from Brigham Young University, Utah once wrote his research about 'Deception and Fraud' in Gibbons and Turell (2008). This research was published as a sub-chapter of the journal series of AILA Applied Linguistic Series (AALS) Volume 5. In this research, Eggington attempted to explore the linguistic elements of Nigerian Advanced Fee Fraud to see how linguistic knowledge can be used in defining and detecting deception and email fraud. Eggington used the theory of Semantics by Anna Wierzbicka (2006). He explained the definition of deception through the perspective of linguistics in the beginning. He also applied Fauconnier's theory that "the actual truth conditions exist within the mental space constructed by the language used in the email" (Gibbons, 2008, p. 255).

Previously, Isti'anah (2014) published her article entitled *Transitivity Analysis in Four Selected Opinions about Jakarta Governor Election* that analyze four selected opinions about the election from those who are interested in politics by using transitivity analysis. The method employed in her research was Critical Discourse Analysis which mainly focused on transitivity analysis. Based on the analysis, she found that Opinions about the Jakarta governor election employ material, relational, and verbal processes. The most opinions utilized material processes to show what Jakarta people expect from the governor, reflected by Actor-Goal, Affected, and Goal-Recipient participants. The relational process occurs in the data to attach Jakarta to its labels, shown by Carrier-Attribute participants.

The verbal process reveals what the candidates assure when they win, by the appearance of Sayer-Verbiage. The mental process occurs with Jakarta as the Senser.

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Circumstances of purpose often exist in the data, indicating people's expectation in the election. The research of Isti'anah (2014) has similarities in using transitivity analysis. The research showed how the meaning of the Jakarta governor election is constructed through the choice of process types of clauses which gave a significant contribution to the current research especially in the way the data is analyzed.

In this paper, transitivity analysis tried to figure out the author's intention from the text. It usually used in discourse analysis in other to find the ideology behind the text. Previous studies, Sujito etc (2019) published an article entitled Critical Discourse Analysis on Donald Trump's Strategy against His Addressee to Win the US Election. This paper showed how this study investigates the uncover ideology of Donald Trump behind his addressee entitled Making America Safe which is relating to the existence of jihadist militant and how does he use the ideology to persuade the audiences. As Sujito etc stated that "Critical Discourse Analysis deals with the hidden ideology inside language" (Sujito, etc, 2019, p. 27)

The authors used Van Dijk's theory, which is included the micro structure analysis; the meaning of a text can be analyzed by observing the micro structure of a text, such as the words, phrases, sentences, preposition, and other. This is in line with the transitivity analysis which focus on microstructure of a text especially clause.

Coulson (2020) recently published his article entitled *More than Verbs: An Introduction to Transitivity in Legal Argument.* He assumed the necessity of multiple participants and actions rather than states as a foundation for transitive events. He analyzed the aspect, punctuality, volition, affirmation, realis, agency, affectedness, and individuation as important components of legal argument, illustrating how these points are used in legal contexts along with examples from legal complaints, trial transcripts, judicial opinions, and lawyering manuals. Coulson stated that that "transitive verbs may not always be inherently argumentative or prejudicial because they are often not highly transitive. But transitivity understood as a transfer of action that encroaches or impinges on another certainly is argumentative and prejudicial" (Coulson, 2020, p.124). So, understanding transitivity from a functional perspective not only provides legal advocates with the tools to use verbs more precisely, but illustrates how other linguistic resources attribute transitivity and offers unique insights into the structure of legal reasoning.

3. METHODS

3.1. Research Design

This research uses a descriptive qualitative approach. Neuman stated that "data are in the form of words, sentences, and paragraphs rather than a number, it refers to qualitative research. Qualitative data are empirical which involve documenting real events, recording what people say (with words, gestures, and tone), observing specific behaviors, studying written documents or examining visual images" (Neuman, 1997). This approach is chosen because the researcher discussed the description and interpretation of the process types in email fraud and how the language contained traces of deception by using the analysis of the transitivity system.

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To analyze the data, the researchers uses a transitivity system from Systemic Functional Linguistics (SFL) proposed by Michael Halliday. SFL sees language as a system of choices the chosen linguistic features put together express meanings. In SFL, 'clause' rather than 'sentence' is the unit of analysis. SFL model proposes that human language has evolved a clause as a unit in which to make three generalized kinds of meanings, called language *metafunction*; they are *Experiential metafunction* (clause as representation), *Interpersonal metafunction* (clause as an exchange), and *Textual metafunction* (clause as message) (Eggins, 2004, p. 58-59).

Eggins (2004) stated that "there is one major system of grammatical choice involved in this kind of meaning. This is the system of transitivity or *process type*" (p.213). According to Halliday (1978), whenever one reflects on the external world of phenomena or the internal world of one 's consciousness, the representation of that reflection would take the form of content (p.112). The form of content is realized by the *transitivity system*. The transitivity system construes the world of experience into a manageable set of process types. A process is composed of three semantic categories: the processes, the participants, and the circumstances. To understand how the transitivity system works in clauses, there are various process types, which (grammatically) classified into three major ones: *material, mental,* and *relational process* and three minor ones: *verbal, behavioral,* and *existential process*.

3.2. Data

The data is the clauses in an email text that have fraud indication. According to Creswell (2013), the basic procedure in reporting the results of a qualitative study are to develop descriptions and themes from the data, to present these descriptions and themes that convey multiple perspectives from participants and detailed descriptions of the setting or individuals (p. 254).

Based on the procedure introduced by Creswell above, this research was presented (1) as a process model by providing analysis of transitivity system into table to describe the analysis of language form and function in the email scam messages and (2) as description model by providing interpretative analysis of the clauses to identify the fraudulent language in email scams. These two methods are combined to achieve a significant result of the research.

In this research, the data were presented in the form of tables. The data were first classified into clauses; each clause was labeled data C 1 until C 5 The data C 1 stands for the first clause from the message.

3.3. Data Collection Tools

Data collection tools that are used for this research are a notebook device by using Microsoft Word, internet connection, and an anonymous email account where the data is collected. The email fraud was sorted from the Spam section in anonymous account. It then captured or screenshot by using notebook and retype into table of process type in Microsoft Word. IJOTL-TL, Vol. 6, No. 1, January 2021 p-ISSN: 2502-2326; e-ISSN: 2502-8278 <u>Https://soloclcs.org;</u> Email: <u>ijoltl@gmail.com</u> Center of Language and Cultural Studies, Surakarta, Indonesia Rifki, Yudia; Sawirman & Usman, Fajri. (2021). Transitivity Analysis in Detecting Fraudulent Language in Email: Forensic Linguistic Approach. IJOTL-TL, 6(1), 30-41. DOI: 10.30957/ijotl-tl.v6i1.648.

3.4. Data Collection

The research data were collected from an email fraud in the spam section received by anonymous email accounts that are chosen randomly. The message was sent by unknown senders. To collect the data, the qualitative document procedures were used. As stated by Creswell (2013) that during the process of research, the writer may collect qualitative documents which may include public documents (e.g., newspapers, minutes of meetings, official reports) or private documents (e.g., personal journals and diaries, letters, e-mails) (Creswell, 2013, p. 242).

In addition, the collected data are also analyzed by using distributional methods. Sudaryanto (1993) stated that "the distributional method is a method of analysis data which uses lingual aspect of the data itself "(Sudaryanto, 1993, p. 15). The data are analyzed by using deletion, extension, substitution, and insertion technique. Distributional method and its techniques are applied to analyze the circumstances of each clause in the fraudulent language in email scams

3.5. Data Analysis

In this research, forensic linguistics focused on examining language evidence in the form of written language that is considered a fraud. Shuy suggested, "In the legal context, fraudulent language contains the features of both lying and deception even though people can honestly say things that are untrue without willfully knowing or intending to utter falsehoods." (Shuy, 2016: p.19).

To analyze the data, the researchers uses a transitivity system from Systemic Functional Linguistics (SFL) proposed by M.A.K Halliday. SFL sees language as a system of choices the chosen linguistic features put together express meanings. In SFL, 'clause' rather than 'sentence' is the unit of analysis. SFL model proposes that human language has evolved a clause as a unit in which to make three generalized kinds of meanings, called language *metafunction*; they are *Experiential metafunction* (clause as representation), *Interpersonal metafunction* (clause as an exchange), and *Textual metafunction* (clause as message) (Eggins, 2004, p. 58-59).

In Experimental metafunction, Eggins (2004) stated that "there is one major system of grammatical choice involved in this kind of meaning. This is the system of transitivity or *process type*" (p.213). According to Halliday (1978), whenever one reflects on the external world of phenomena or the internal world of one 's consciousness, the representation of that reflection would take the form of content (p.112). The form of content is realized by the *transitivity system*. The transitivity system construes the world of experience into a manageable set of process types. A process is composed of three semantic categories: the processes, the participants, and the circumstances. To understand how the transitivity system works in clauses, there are various process types, which (grammatically) classified into three major ones: *material, mental,* and *relational process* and three minor ones: *verbal, behavioral,* and *existential process*.

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4. RESULTS

The data were gathered from an email sent by *Mrs. Lerynne West* using the email account <u>*BLES@tuba.ocn.ne.jp*</u> on Monday, April 8th, 2019 at 8:36 AM. The subject of this email is *Hope to make you and your family happy*. The email was sent from an account under the name of Mrs. Lerynne West who was claimed as the winner of \$343.9 Million on a lottery in 2018. The email stated that the recipient/ addressee is one of the lucky selected individuals who would be donated some of her money. She decided to donate the sum of \$10.5 million for 5 selected persons. After sorting out the data into clauses, there are about 17 clauses spotted in this email fraud including the simple and complex clauses.

The results are three of six processes of the transitivity system found in this email fraud; they are seven clauses (Data C.2, C.3, C.4, C.7, C.8, C.9, C.11, C.12, C.14, C.15, C.16) use the material process, three clauses (Data C.1, C.10, C.13) use the relational process and the other three clauses (Data C.5, C.6, C.17) use the mental process. The table of analysis will be presented on the appendix. The sample of table analysis is described below:

4.1 Material Process

The material clause is realized in C.2 of this email. It is said that the email sender would like to donate some money to five random people. The analysis of this clause is described in the table of the transitivity system below:

Ι	'm donating	to 5 random individuals
Pt:	Pr:	Pt:
Actor	Material	Recipient

Table 1. Data C.2 Material Process

In C.2, the actor uses the pronoun "I" which refers to the sender (Mrs. Lerynne West). The actor is followed by the process "*'m donating*" to explain what she is doing with the money she just earned. The process "*'m donating*" has a sense of generosity that portrays the character of Mrs. Lerynne West as a good person who willingly gives her money away to an unknown person. It links to where the money would be given to "*5 random individuals*" which represents the Recipient of this clause, not the Goal. As stated by Halliday and Matthiessen (2014) that "like the Goal, both Recipient and Client are affected by the process; but while the Goal is the participant that is impacted by the process, the Recipient/Client is the one that benefits from it. (Halliday and Matthiessen, 2014, p.239)

The addressee is claimed as one of the selected 5 people who gain benefits affected by the process "*'m donating*". However, the C.2 is followed by two clauses in C.3 as one complete idea of why the email sender is doing the process "*'m donating*" and why the email reader was included as one of "*5 random individuals*" as the Goal. The next sample is from data C.8.

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Data C.8	<i>I just started International charitable donation campaign</i> <i>As i</i>
	will be giving a donation sum of US\$10.5 MILLION each to
	<i>improve the life of FIVE {5} Lucky individual from any part of</i>
	worldwide

The scammer uses clause complex in this data which the first clause functions as the main clause and the other functions as the subordinate clause. These clauses are combined using connector "as". In the first clause of C 1.8, the email senders keep using the actor "I" to support the previous clauses which then follow by the material process "started". It refers to what has the actor "I" have done with the money. The goal is the nominal group "International charitable donation campaign" as the program they have planned for the email recipient. To support this idea, there is the circumstance of location in the clause which explains the time of the process. It is described in the table of the transitivity system below:

Table 2. Data C.8 Material Process

Ι	just	Started	International charitable donation campaign
Pt:	Circ:	Pr:	Pt:
Actor	Location: Time	Material	Goal

The Goal is the nominal group "a donation sum of US\$ 10.5 MILLION each" followed by the material process "will be giving" which refers to the money they want to give by the same actor "I". Here, the Actor is the same but there are two participants of Goal which is affected by the process as states that "the clause can consist of one participant, namely an Actor, the inherent entity that brings about a change, with the option of referencing a second participant, labeled Goal, and defined as the entity that is changed or affected by the process" (Bartley, 2017: p.28). The table of transitivity analysis for this clause is described below:

Table 3. Data	C.8 Material Process
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As	Ι	will be giving	a donation sum of US\$10.5 MILLION each	to improve the life of FIVE {5} Lucky individual	from any part of worldwide
Conjunctive marker	Pt: Actor	Pr: Material	Pt: Goal	Circ: Cause	Circ: Location

The scammer uses the circumstance "as" and "to improve the life of FIVE {5} Lucky individual" as the reason why they will give money. The circumstance of Location "from any part of worldwide" is used to show how massive the location of donation they have covered., it can be seen that the function of these circumstances of Cause is obligatory using the distributional method. Omitting one of these circumstances will change the meaning. However, it does not apply to the circumstance of location.

4.2 Relational Process

Eggins (2004) once said that the category of relational processes covers the many different ways in which *being* can be expressed in English clauses (p.239). In general, relational processes require two participants. It cannot and do not be with only one participant. Halliday & Matthiessen (2014) stated that "Both this outer experience and this inner experience may be construed by 'relational' clauses; but they model this experience as 'being' rather than as 'doing' or 'sensing'" (Halliday & Matthiessen, 2014, p. 259). Relational processes are concerned with *being*, *possessing*, or *becoming*. The progressive is resisted in the relational processe.

Data C.1I am Mrs. Lerynne West the current winner of \$343.9 million in
powerball lottery on October 27, 2018 drawing

The email started with the C.1 when the email senders used the relational intensive process "am" which was affected by the participant "I". The participants were "I" and "Mrs. Lerynne West". The participant of "I" was Carrier who acted as Identifier while "Mrs. Lerynne West" was assigned as the one that being Identifier in this process. Therefore, the email senders wanted to show that "I" as the sender of the email represented "Mrs. Lerynee West" as the identifier. The table of the transitivity system of this email was described in the following:

Ι	am	Mrs. Lerynne West		in powerball lottery on October 27, 2018 drawing
Pt:	Pr:	Pt:	Circ:	Circ:
Identified	Relational:	Identifier/	Role	Location: Time
/ Token	Intensive	Value		

Table 4. Data C.1 Relational Process

To add more information regarding the Carrier, there are two circumstances used; Role and Location. The circumstance of Role "the current winner of 3343.9 million" is used to give information about who is the Carrier "I" in the email. The circumstance of Location "in powerball lottery" shows the place and "on October 27, 2018 drawing" shows the time as additional information to the circumstance of how and when the money is earned.

This clause is also analyzed by using the distributional method. The omission technique is applied. Evidently, the circumstance of Role and Location in this clause are considered non-obligatory. By omitting these circumstances, the clause is still acceptable. It means these circumstances can be omitted without changing the semantic and syntactic role of this clause into "*I am Mrs. Lerynne West*".

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4.3 Mental Process

The other process found in the data is the mental process. Instead of talking about what we are doing, the mental process represents what we think and feel. Halliday stated processes that encode meanings of thinking or feeling as mental processes. Eggins (2004) stated that "Halliday divides mental process verbs into three classes: cognition (verbs of thinking, knowing, understanding, for example, I don't know her name), affection (verbs of liking, fearing, e.g. I hate injections), and perception (verbs of seeing, hearing, e.g. *Simon heard it on the new*" (p.225)

In this research, there are about 7 (seven) clauses that categorized the mental process. The tables of the transitivity system below describe the following clauses that use the mental process by the scammers to touch the email reader through the psychological approach.

Data C.5	I have	voluntarily	decided	to	donate	the	sum	of {\$10	.5
	Millior	1} to you as c	one of the	sel	ected {5,	},			

In data C.5, the process is done by using the mental process. The process used is the mental process of cognition *"have decided"*. It shows that she (the sender) has thought about it. Meanwhile, the participant *"I"*, affected by the process, is a *Senser*, the person who does the process of thinking. The transitivity analysis of this clause is described in the table below:

Ι	have	Voluntarily	decided	to donate the sum of {\$10.5 Million} to you	as one of the selected {5},
Pt:		Circ:		Circ:	Circ:
Senser		Manner		Phenomenon	Role
	Pr: Me	ntal (cognition)	1		

 Table 5. Data C.5 Mental Process

Halliday and Matthiessen once stated that "in a clause of 'mental' process, there is always one human participant; this is *the Senser*: the one that 'senses' – feels, thinks, wants or perceives"(Halliday & Matthiessen, 2014, p.249). The other participant of the process was "*to donate the sum of {\$10.5 Million} to you*" which functions as a Phenomenon. This participant is the thing that is perceived by the mental process. The sender also put the circumstances of Manner "*voluntarily*" to show in what way the process is carried out. In this clause, the circumstance "*as one of the selected {5}*" is considered non-obligatory. The researcher used the distributional method to test this clause. Using the omission or deletion technique, this circumstance did not change the clause structure and the meaning.

5. DISCUSSION

Sometimes fraud contains lying and misleading statements. Shuy (2016) argued that a major problem in identifying fraudulent intentional lying and deception is that "no

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science can delve into the minds of the people to determine their true intentions with accuracy. The best and perhaps only windows that reflect a speaker's mind are the language clues that people use to express what they intend" (Shuy, 2016, p.20).

The researcher indeed agrees with this statement. The fraudulent language of random email fraud in this research has been done by analyzing language patterns using Halliday's theory of the transitivity system. The result is the language clues that construe the swindler's mind in the email message have been found. However, this research does not aim to detect whether the email was a fraud or not. It is rather to show what linguistic features are used in an email that has already been indicated and suspected as a fraud. This research is expected to get more knowledge to figure out the veracity of the email message in the future.

This research is expected to give a significant contribution to the forensic linguistic perspective to help law enforcement to identify the future written text evidence that has indications as a fraud, especially an email fraud. The transitivity analysis of process type in detecting the form and function of fraudulent language in email fraud has been conducted. The research results show that the data are constructed by using three types of process in 17 clauses; material process, mental process, and relational process. However, Shuy (2016) once stated that "No linguistic analysis can detect lying, but it is possible to demonstrate how it can't be done by programs claiming to identify individual liars" (p.11).

The reason why this research important is email fraud is a crime that uses written language to commit the fraud, so the linguistic analysis is needed to reveal how deception language is constructed. Many cybercriminals take advantage of the anonymity of the online world to deceive, hack, and steal from thousands of Internet users. Therefore, sharpening skills in detecting fraudulent language on email messages is important. Because the growing number of victims has fallen into this type of fraud, analyzing these phenomena from the linguistics point of view is interesting to be conducted for further research.

7. CONCLUSION AND IMPLICATION

The research findings that lead to identifying the fraudulent language of email fraud through analyzing the process types find (1) the dominant process used in the fraudulent language of the email fraud and (2) the misleading statements used to defraud the email readers. In referring to text types found in forensic linguistics we are referring to several different contexts of situation, each of which generates one or more text types.

Analyzing the clauses in email fraud to figure out what language form and function used by the scammer has been done using the table of process type of transitivity system. The findings are (1) there are three from six process types found from the data, they are material process, mental process, and relational process. There are no verbal process, existential process, and behavioral process found. (2) the scammers dominantly write the email message using the material process. It can be seen that 11 clauses used the material process, 3 clauses used the mental process, and the

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other 3 clauses used relational Process. (3) There is more than one circumstance often used in one clause by the swindler to explain their reasons for almost every statement that they state in the clauses.

Based on the analysis above, the transitivity system using the table of process types can explain and categorize the processes, participants, and circumstantial elements. The researcher found and identified that the dominant process used by the scammer to defraud the email recipients is the material process. The material process is used in 11 clauses to construct the fraudulent language by the scammer in the data. This process describes the processes of happening and doing, which include concrete and tangible actions to the email readers. The verbal groups included in these clauses are 'm donating; was selected; have spread; watch; started; will be giving; was submitted; will contact; contact; send; receive.

The fraudulent language was constructed by realizing the misleading statements. The material process is used to deceive the email recipients by creating a misleading statement to; (1) describe what the senders do, what they have, and what they are capable of doing; (2) to show how the email accounts are chosen (3) to make the email recipients believe that they are the beneficiary ones; and (4) to convince the email recipients to directly communicate to the senders.

Meanwhile, the fraudulent language which is construed through the mental process shows how the scammers describe the messages by attracting the cognitive, perceptive, and emotive or affective aspect of the email recipients. The three clauses found using the mental process are used to deceive internet users from the psychological perspective. The researcher found that the mental process was considered effective to make false perceptions of the reader.

The fraudulent language which is construed using relational process showed how the scammer attempt to defraud the email recipient by; (1) by introducing the figures of an important individual, (2) by creating a false representation of the figure,; (3) by representing the detail amount of money and the place to access it as the attribute that offered to the email recipients.

The researcher also found a significant contribution of the circumstantial elements in the data. This finding shows that often the scammer serves the fraudulent language (1) by enhancing and focusing on the purpose of the messages using the circumstance of Cause and (2) by giving information regarding the location or place where the processes are being conducted to make the email recipients believe the messages are trustworthy.

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