# The Effect of Conflict of Interest on The Independence of Forensic Auditors in Fraud Investigation: A Case Study of KPPN City of Langsa

1<sup>st</sup> Arwin

Postgraduate Student Of Master Of Accounting,
Universitas Pembangun Panca Budi
Medan, Indonesia
arwin2434@gmail.com

2<sup>nd</sup> Renny Maisyarah

Lecturer, Department of Accounting; Master of Accounting,
Universitas Pembangunan Panca Budi
Medan, Indonesia
rennymaisyarah@ymail.com

Abstract — This study aims to analyze the influence of conflict of interest in the independence of forensic auditors and its impact on the effectiveness of fraud investigations. The case study was conducted at the State Treasury Service Office (KPPN) of Langsa City, which is an important entity in state financial management. The independence of forensic auditors is a key pillar in ensuring the objectivity and credibility of fraud investigation results. However, the potential for conflict of interest can threaten this independence, which in turn can hinder efforts to detect and handle fraud. Methods used in study This is approach quantitative with design causal explanatory. Initial data taken past questionnaire distributed to the auditor or the party in charge in supervision and investigation fraud KPPN Kota Langsa, and the techniques that will be applied is census (total sampling) or purposive sampling, depending on the number of population. Variable conflict interests, independence of forensic auditors, and tracing fraud will rated use Likert scale. The data that has been collected later will analyzed with technique statistics descriptive and inferential, including testing assumption classic as well as analysis regression simple or multiple, with help device soft statistics. Research result This expected can give proof empirical about to what extent does conflict of interest affect independence of forensic auditors in the environment sector public, especially the KPPN of Langsa City. More further research this will also identify How independence of forensic auditors contribute to effectiveness investigation. Findings This expected can give implications practical for management of KPPN Langsa City and maker policy in formulate a strategy for mitigate conflict of interest, strengthen auditor independence, and improve capacity fraud investigation for accountability more state finances good.

Keywords: Conflict of Interest, Independence of Forensic Auditors, Investigation Fraud, KPPN Langsa City, Public Sector.

#### I. INTRODUCTION

In the field of forensic auditing, maintaining independence is one of the core values that need to be guarded for ensure objectivity and honesty in the process of investigation. Forensic auditor must can operate without disturbance or influence from party wherever, especially moment identify action fraudulent misrepresentation nation or institution certain. However, in in fact, the principle

independence This often tested by the presence of conflict interests (conflict of interest), whether of a direct whether or not direct.

Conflict conflict of interest arises when the auditor has interest personal or connection specific that can influence his professionalism moment operate its role. Condition This can reduce audit quality, creating internal bias decisions taken, such as at the Service Office State Treasury, which manages public funds and is part from cycle finance government.

KPPN Langsa City as one of the manager state finances have role important dalma distribution budget and report finance. Analysis to institution this relevant for show how far the conflict interest can influence independence of forensic auditors and its influence to effectiveness disclosure fraud. In case this is very important for understand dynamics connection between conflict interests and independence of auditors, as well as How system control and ethics profession can strengthen auditor's position to remain can operate in a way objective.

This study aiming for to study impact conflict interest to independence of forensic auditors in search fraud, with focus studies case at the KPPN of Langsa City. Through approach this, it is expected can give contribution in development more forensic audit practices can accountable and transparent, and become runway in formulate policy prevention fraud in the environment agency government.

## II. LITERATURE REVIEW

#### **2.1** Forensic Auditors and Their Roles

Forensic auditor is individuals who have skill specializing in the field accounting, investigation, and law in frame detect, prevent, and investigate fraud and crime finance others. Tasks main they is gather evidence useful finance in the legal process. In an effort find fraud, forensic auditor play a role as investigator financial research transaction, report finance, and documents other for find patterns fraud, the perpetrators involved, and losses that



occur. Success in identify fraud relies heavily on the auditor's thoroughness, objectivity, and independence.

#### **2.2** Auditor Independence

Auditor independence is very important basis in every audit process, including forensic audits. Independence refers to a mental attitude that is not affected by pressure, influence, or interests that can bother objectivity and integrity an auditor. There are two aspects related independence:

- 1. Independence in fact: This refers to the auditor's sincere and unbiased mental state. interests, no take sides, and No affected in make decision professional. This is a internal conditions that are not easy observed in a way direct.
- 2. Independence in appearance: This is view from party outside (such as user report, society) which states that the auditor does not tied to a relationship or situations that can influence objectivity. Auditors need to ensure that they No only independence in a way real, but also visible independent.

The disappearance independence, good in fact and appearance, can bother trust in the results of the audit of reputation funds public to auditor profession.

#### 2.3 Fraud

Fraud can explained as the act of committing in a way on purpose for to obtain the benefits that are not legitimate, often through ways like manipulation, concealment, or abuse information and assets. In the world of organizations, fraud can covers various form action like embezzlement, corruption, fraud in report finance, theft property, and misuse power. Tracking efforts fraud by forensic auditors covers introduction signs fraud, collection evidence, do interviews, analyzing data, and make report about results found.

# **2.4** Conflict of Interest

Conflict interest appear moment somebody or organization own interest personal or professional who can in a way no reasonable influence evaluation or his actions. In the field of forensic auditing, conflict interest can appear when forensic auditor own connection personal, financial, or professional with individual or entity in progress audited or with related parties in case ongoing fraud researched. Some example conflict interest is:

- 1. Interest finance: Auditors have share or investment in the audited organization, or own connection significant financial with the manager organization.
- Connection family or personal: The auditor has connection blood or friendship close with the people involved in fraud or manager organization.
- 3. Provision service others: Auditors who offer service consultation outside audit to the same organization, which can cause dependence or view about the disappearance objectivity.

4. Pressure from party third: There is pressure from internal parties or external that can influence results auditor findings.

Conflict interest can be very damaging auditor independence because can cause prejudice, lowering partisanship, and even encourage auditors to cover up or change facts for the benefit certain.

#### **2.5** Framework Relevant Theories

Study This possibility big will apply a number of supporting theory analysis connection between conflict the interests and independence of forensic auditors, including:

- 1. Agency Theory: This theory to describe interaction between principal (for example, owner) company or government) and agents (such as management or auditor). In case this, the auditor acts as expected agent operate task for interest principal. There is a conflict interest can bother function agent.
- Legitimacy Theory: This theory hinting that
  organization try operate in accepted framework
  and norms of society for to achieve legitimacy.
  Auditors who are independent and professional
  can increase legitimacy from forensic audit
  results in the eyes public.
- 3. Compliance Theory: This theory can used for understand how auditors follow standard ethics and professionalism, as well as the way in which conflict interest can damage level compliance.

# **2.6** Case Study of KPPN Langsa City

Use of KPPN Langsa City as example for study This show that attention main is in the sector public, especially agency government. KPPN is part from Directorate General Treasury in the Ministry of Finance which has role important in management of state funds, including APBN distribution and reports finance. Environment in the sector public often have characteristic features special related with conflict interests, such as existence pressure politics, interaction in bureaucracy, and different regulations from sector private. Therefore that, analysis case This potential for to reveal interaction special from conflict interests that can influence independence of forensic auditors in situation government area.

**2.7** The Relationship Between Conflict of Interest, Forensic Auditor Independence, and Forensic Investigation Fraud

This study aiming for evaluate how much big influence conflict interest to independence of forensic auditors. Hypothesis base state that the more big conflict interests faced by forensic auditors, then the more low they independence. Decrease independence This can impact on quality and effectiveness in identify fraud. Auditors who are less independent perhaps will tend to:

- 1. Ignore proof important cheating.
- 2. Turning it upside down or manipulate results findings.

- 3. Not reporting fraud that has been found.
- 4. Direct investigation going to conclusion that is not neutral.

Therefore that, study this is very important for guard honesty in the forensic audit process, especially in business eradicate fraud in institutions government.

#### III. METHOD

This study will use method quantitative. Quantitative methods chosen because objective this study is for test hypothesis as well as measure the impact of the independent variable (Conflict of Interest) on variable dependency (Independence of Forensic Auditor) and its impact on the investigation fraud. Data obtained will shaped numbers and will analyzed with use statistical techniques.

# 3.1 Research Design

Research design that will be applied is study explanatory in nature causal. The purpose of design this is for describe connection between cause and effect between various the variables studied, namely to what extent does it influence conflict interest to independence of forensic auditors, as well as How independence That affect the search fraud. Research this will also done as studies case at KPPN Langsa City for give more insight in about phenomenon This in framework organization government.

# **3.2** *Population and Sample*

- Population: In the research, population covering everyone who runs task as an auditor or own not quite enough answer in the internal audit/ supervision that carries out investigation to action fraud KPPN Kota Langsa. This can also includes internal auditors, supervisors, or official others as designated for investigate signs the occurrence fraud.
- 2. Sample: Remembering that study This only centered on one company (KPPN Langsa City), then amount existing population no many enough. With the method taking applied sample is census (total sampling) if population no too big and can reachable, where all member population made into as sample. However, when population classified as big, the technique that will applied is purposive sampling. Criteria from purposive sampling including:
  - a) Individual with background background in auditing or investigation fraud.
  - b) Individuals involved in a way active in the audit process or supervision at the Langsa City KPPN.
  - c) Individuals who have understanding about draft conflict interests and independence of the auditor.

d) A ready individual follow as well as in study.

Determine amount appropriate sample will notice data availability and features typical certain from the Langsa City KPPN.

#### **3.3** *Variables Research and Measurement*

# 3.3.1 Variables Independent (X): Conflict of Interest

Definition Conceptual: A situation in which a
forensic auditor own attachment personal or
professional who can potential influence his
impartiality and honesty moment do task
investigation fraud.

## 2. Indicators:

- a) Connection finance (such as, ownership) shares, debt) with the entity in progress audited.
- b) Connection family or personal with leader or individuals involved in cheating.
- c) Giving sufficient non-audit services big.
- d) Pressure or threat from superior or party outside.
- e) Motivation For maintain position or get promotion.
- 3. Rating Scale: Likert Scale (for example, 1 = Strongly Disagree, 5 = Strongly Agree).

# 3.3.2 Variables Dependent 1 (Y1): Independence of Forensic Auditor

- 1. Definition Conceptual: The mental attitude of a forensic auditor who is not influenced by pressures, biases, and interests that can be hinder objectivity and integrity in do investigation to fraud, good in matter fact and appearance.
- 2. Indicators:
  - a) Independence from influence managerial.
  - b) Clarity in make decision.
  - c) Honesty in convey results.
  - d) Attitude neutral.
  - e) Compliance against normal ethics profession
- 3. Rating Scale: Likert Scale (for example, 1 = Strongly Disagree, 5 = Strongly Agree).

# 3.3.3 Variables Dependent 2 (Y2): Fraud Investigation

- a) Definition Conceptual: Success and quality from the investigation process carried out by forensic auditors for find, recognize, and convey action fraud.
- 2. Indicators:
  - a) Collection complete evidence.
  - b) Accuracy in recognize method Work

fraud.

- c) Clarity and precision in report results fraud.
- d) Ability For identify perpetrator fraud.
- e) Accuracy time in finish investigation.
- 3. Rating Scale: Likert Scale (for example, 1 = Strongly Disagree, 5 = Strongly Agree).

# **3.4** Data Types and Sources

#### Data Type:

- 1. Primary Data: Information obtained in a way direct from participant through questionnaire information This will covers view participant about conflict interest, level independence they, as well as success in identify fraud.
- 2. Secondary Data: Information additional that can got from Langsa City KPPN documents, such as arrangement organization, internal audit procedures, or report fraud that has been finished (with still guard confidentiality information).

#### Source

- Respondent (Auditor/ Inspector): The person who carries it out audit function or appropriate supervision at the Langsa City KPPN.
- 2. Documents of KPPN Langsa City: Files, procedures, or related policies with audit and handling fraud.

# 3.5 Method Of Collecting Data

Main data will obtained with use questionnaire. Questionnaire the will load a number of question closed which utilizes scale Likert for evaluate variables in research. The data collection process consists of from:

- Development Questionnaire: Formulating questions in accordance with indicator variables that have been determined. Questionnaire will undergo the testing process validity and reliability moreover formerly.
- a) Validity Test: Applying technique correlation pearson For evaluate whether every question measure things that should be measured.
- b) Reliability Test: Using cronbach's alpha for evaluate internal consistency of questionnaire.
- 2. Licensing Research: Submitting letter application For get permission study to the Langsa City KPPN.
- 3. Distribution Questionnaire: Distributing questionnaire in a way direct to respondents who have selected. Information about objective research and assurance data confidentiality will be given.
- 4. Collection Questionnaire: Taking questionnaire that has been filled in by

# respondents

# **3.6** *Method Of Collecting Data*

Data obtained will analyzed with method statistics descriptive and inferential. Application statistics such as SPSS or similar programs other will applied.

- 1. Statistics Descriptive: Used For describe characteristics of data from every variables, such as mean, median, mode, deviation standards, and distribution frequency.
- 2. Statistics Inferential: Used For test suspicion in research. The stages that will be done:
  - A. Assumption Test Classic: Before carry out analysis regression, steps the first one will be taken is do testing assumption classic so that the regression model is applied fulfil criteria statistics. The test that will be implemented includes:
    - Normality Test: Checking does the data follow normal distribution, for example, with method Kolmogorov -Smirnov or Shapiro-Wilk.
    - b) Multicollinearity Test: Investigating whether there is significant linear relationship between variable independent.
    - c) Heteroscedasticity Test:
      Examining whether residual variance is No stable, for example with the Glejser test or through chart spread.
    - d) Autocorrelation Test: Evaluating whether there is connection between error disturbance in period t with error disturbance in period t-1.
  - B. Analysis Multiple Linear Regression: If there is more from One variable independent or variable dependent nature sequentially. If attention main is the impact of X on Y1, and Y1 on Y2, then can used:
    - a) Analysis Simple Linear Regression: For test the influence of Conflict of Interest (X) on Independence of Forensic Auditor (Y1).
    - b) Analysis Simple Linear Regression: For test influence Independence of Forensic Auditor (Y1) towards Fraud Investigation (Y2).

### C. Hypothesis Testing:

a) t-test (partial): For test significance the influence of each variable independent (if There is more from one) against variable dependent in a way partial.

- b) F test (simultaneous): For test significance influence all over variable independent in a way simultaneous to variable dependent.
- c) Coefficient Determination (R<sup>2</sup>):
   For know how much big proportion variation variable dependent can explained by variables independent.

#### IV. RESULT AND DISCUSSION

#### A. Research result

In accordance with information obtained from distribution questionnaire to the 15 participating forensic auditors in the audit at the Langsa City KPPN, under This is results data analysis descriptive and inferential:

- 1. Descriptive Results:
  - a) Conflict of Interest (X): Majority Respondent state Once experience pressure or potential situation become conflict interests, good in the form of pressure from superiors, personal relationships with the audited party, well as as encouragement For protect reputation agency.
  - b) Independence (Y): Although part major auditors stated still make an effort guard objectivity, there is decline score on the aspect of "freedom in convey findings" and "neutrality" in taking decision".

# 2. Validity and Reliability Test:

- a) All items on the questionnaire own mark item-total correlation > 0.3, which indicates validity adequate.
- b) The Cronbach's Alpha value is 0.802 for Conflict of Interest and 0.791 for Auditor Independence shows that instrument study reliable.

# 3. Pearson Correlation Test:

- a) Obtained mark coefficient correlation (r) of -0.642, with mark significance (p) of 0.004 < 0.05. This shows existence connection significant negative between conflict of interest and auditor independence.
- 4. Analysis Simple Linear Regression
  - a) Equality regression: Y = 57.24 0.63X
  - b) R Square value = 0.412, meaning 41.2% variability Auditor independence is influenced by conflict of interest.
  - c) significance value of the F test = 0.004, which means the regression model significant.

#### B. Discussion

Research result show that there is significant negative impact between conflict interest to independence of forensic auditors. In other words, the more big conflict interests faced by the auditor, then the more low independence they moment operate task in detect fraud.

Invention This in line with studies previously ever done, which reveals that conflict interest can cause moral pressure, disruptive objectivity, and limiting auditor freedom in convey audit results in honest and open.

At the KPPN of Langsa City, the conflict interest appear in various forms, such as:

- 1. Pressure from superior For No publish findings sensitive.
- 2. The auditor's personal relationship with staff or officials who are audited.
- 3. There is a feeling of reluctance for tarnish one's good name of agency.

Even though the auditor tries maintain its independence, its existence pressure from system and culture unfinished work fully support openness become a number of inhibiting factors. Therefore that, it is necessary existence of:

- 1. Reporting mechanism conflict clear interests.
- 2. Implementation policy auditor rotation periodically.
- 3. Improvement protection to forensic auditors in uncover fraud.

Findings from study This give meaningful contribution for institution government, especially in field state finances, for increase forensic audit system that does not affected by the mixture hands and pressure from in.

#### V. CONCLUSION

#### Conclusion

Based on results research that has been done, can concluded things following:

- Conflict of Interest has influence significant negative to independence of forensic auditors. This means that the more tall level conflict the interests faced, increasingly low auditor's ability in guard objectivity and neutrality in fraud tracking.
- 2. In the KPPN environment of Langsa City, forensic auditors face various form conflict interests, good in the form of internal pressure, personal relationships, and loyalty to institutions, which have the potential hinder implementation of audits independent.
- 3. Coefficient value correlation of -0.642 and the contribution conflict of interest variable of 41.2% against decline auditor independence shows that problem This need get attention Serious from management and maker policy.

4. Efforts to maintain the independence of forensic auditors is very important For ensure that the fraud tracing process is underway in a way transparent, fair and can accountable.

# Suggestion

- Implementation Anti-Conflict Policy Interest: KPPN needs strengthen internal policy regarding reporting and management conflict interests, including compilation guidelines ethics and declaration form free conflict for auditors.
- 2. Training and Strengthening of Professional Ethics: It is recommended that forensic auditors regularly follow training about ethics profession, moral pressure, and coping strategies conflict interests to be able to guard professionalism in situation difficult.
- 3. Auditor Rotation and Assignment Objective: The audit assignment should be done in a way random or take turns for avoid formation connection potential person cause conflict interest.
- 4. Whistleblower Empowerment and Auditor Protection: Agencies need provide channel safe reporting as well as protection law for auditors who are facing pressure or threat consequence fraud disclosure.
- Study Continued: Required study more carry on with coverage more respondents breadth and approach qualitative for dig other factors that influence auditor independence in context sector public.

### REFERENCES

- [1] Saputra Komang Adi Kurniawan, Ni Made Rai Juniariani. (2019). CONFLICT OF INTEREST AND AUDITOR INDEPENDENCE IN PUBLIC ACCOUNTING FIRM IN BALI. Accessed from https://journal.trunojoyo.ac.id/infestasi/article/view/5478
- [2] Silooy Natasha Priscilla, Novita. (2021). Auditor's Perception of Conflict Interests and Rent Seeking in Detecting Fraud Indications. Accessed from https://journal.uinjkt.ac.id/index.php/akuntabilitas/article/download/22570/pdf
- [3] Arisendy Avilla Anggun. (2024). Influence Accountancy Forensics, Investigative Audits, and Independence to Fraud Disclosure. Accessed from https://researchhub.id/index.php/jimek/article/down load/2686/2106/9421
- [4] Structure Service Office Organization National Treasury. Accessed from https://djpb.kemenkeu.go.id/kppn/langsa/id/profil/s truktur-organisasi.html
- [5] Sapitri Sundari. (2024). THE EFFECT OF INVESTIGATION AUDIT, INDEPENDENCE ON FRAUD DISCLOSURE. Accessed from https://jurnalistiqomah.org/index.php/jimea/article/ view/1329/1105
- [6] Pascal, W.Y.T. (2024). Conflicts of interest and handling mechanisms in public finances management. Vol. 10, No. 1

- [7] Mahadwartha, P.A. (2007). CONFLICT OF INTEREST ON OWNERSHIP VERSUS FREE CASH FLOW: DIVIDEND POLICY EFFECTIVENESS. Vol. 22, No. 4.
- [8] Moh Shohib. (2020). CONFLICT OF INTEREST PREVENTION STRATEGY IN ERADICATING CORRUPTION IN INDONESIA. Vol. 17, No. 3.
- [9] Anggar Putra. (2024). CONFLICT OF INTEREST KETUA HAKIM MAHKAMAH KONSTITUSI TELAAH PUTUSAN NOMOR 90/PUU-XXI/2023. Vol. 1, No. 2.
- [10] Risetku. (2023). Mengenal Conflict of Interest pada Penelitian Kesehatan.
- [11] Glenn Newman. (2008). Independence And Integrity And Objectivity In Performing Forensic And Valuation Services. American Institute of Certified Public Accountants.
- [12] Diajeng Frastika. (2023). The Effect of Implementing Investigative Audits on FraudDisclosure in Regional Financial Management (Study of BPKP Representatives of North Sumatra Province). Vol. 1
- [13] Nasution, F. R., Nuraini, C., & Sugiarto, A. (2025). The Role of Government in Slum Area Management Strategies for Improving the Quality of Life in Batu Bara Regency. East Asian Journal of Multidisciplinary Research, 4(2), 875-888.
- [14] Nuraini, C. (2009). Critical Study of Theory, Methods and Applications in Visual Systems Research. NALARs, 8(2).
- [15] Nuraini, C., 2017. Room Arrangement Concept: The Sacred-Profane of Heirloom Houses in Hutagodang Village, Mandailing. International Journal on Livable Space, 2(2), pp.109-118.
- [16] Nuraini, C., 2019. Morphology of Residential Environment of Sigengu Village in Mandailing Julu, North Sumatra. Journal of Regional and City Planning (JRCP), 30(3), pp.241-260.
- [17] Nuraini C, 2023. Vernacular Architecture of Mandailing. Technologists. Yogyakarta
- [18] Nuraini, C. 2024a. Pandemic Adaptive Vernacular Settlements. PT. Sonpedia Publishing Indonesia.
- [19] Nuraini, C., Azizah, Q. and Muharrani, S., 2024a. Direction for the Preservation of Spatial Planning of Settlements of the Mandailing Ethnic Community in North Sumatra. NALARs, 23(1), pp.1-16.
- [20] Nuraini, C., 2024b. The Architectural Tectonics of Traditional Buildings in Mandailing, North Sumatera, Indonesia. Civil Engineering and Architecture, 12(2), pp.892-916.
- [21] Nuraini, C., Milanie, F., Novalinda, N. and Andiyan, A., 2024b. Characteristics and Gender Interaction Patterns of the Mandailing Natal Community in the Housing Area of Sorik Marapi Sub-District: A Case Study of Sibanggor Julu Village. Journal of International Crisis and Risk Communication Research, 7(2), pp.186-195.
- [22] Pangaribuan, C. H., Sugiarto, A., & Nuraini, C. (2024). Fulfillment Of Housing Infrastructure, Facilities And Utilities In Serdang Bedagai Regency. Journal of Information Technology,

- computer science and Electrical Engineering, 1(3), 413-424.
- [23] Putra, K. Nuraini, C. A., & INFRASTRUCTURE PLANNING OF THE ADIAN NAGINJANG IRRIGATION NETWORK: **IMPLICATIONS FOR** REGIONAL DEVELOPMENT **AND AGRICULTURAL ECONOMY** IN ASAHAN REGENCY. PROCEEDINGS OF THE FACULTY OF SOCIAL SCIENCES, POLITICAL SCIENCE OF DHAMARMAWANGSA UNIVERSITY, 4, 31-47.
- [24] Pratama, F. (2019). The Effectiveness of Road Infrastructure on Regional Economic Growth. Surabaya: Cendekia Press.
- [25] Rahmadhani, D., Nuraini, C., Abdiyanto, A., Sugiarto, A., & Millanie, F. (2023). Environmental Cleanliness Management Design in Pematang Siantar City.
- [26] Rambe, R. M. H., & Nuraini, C. (2024). Analysis of Transportation Infrastructure Development to Support Economic Growth in Batu Bara Regency. International Conference Of Digital Sciences And Engineering Technology, 1(1), 56-67.

- [27] Situmorang, H., & Nuraini, C. (2024). SPATIAL AND INFRASTRUCTURE PLANNING: INTEGRATION OF TRANS SUMATRA TOLL ROAD IN ASAHAN REGENCY AREA DEVELOPMENT.PROCEEDINGS OF FACULTY OF SOCIAL SCIENCES, POLITICAL OF **DHARMAWANGSA SCIENCE** UNIVERSITY.4, 61-76. FLEET: Research Journal Multidisiplin, 1(12),1408–1414. https://doi.org/10.55681/armada.v1i12.1079
- [28] Sugiarto, A., Kamakaula, Y., Susanty, L., & Periansya. (2024). Research Methodology. Theory & Practice. Saba Jaya Press.
- [29] Sugiarto, A., Yamin S, M., Harahap, K. A. M., & Akmal, R. (2024). Regional development planning. Saba Jaya Press.
- [30] Santoso, B. (2019). Adaptive Infrastructure Planning in Coastal Areas. Semarang: Undip Press.
- [31] Setiawan, A. (2019). Transportation Infrastructure: Theory and Practice. Jakarta: Mitra Wacana Media.
- [32] Sugiyono. (2019). Quantitative, Qualitative, and R&D Research Methods. Bandung: Alfabeta.