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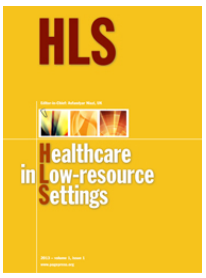

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Exploratory study of factors influencing fraud in the national health service in Buton Islands from a hexagon model perspective

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Abstract

Fraud in National Health Insurance of Indonesia, known as Jaminan Kesehatan Nasional (JKN) services, is a problem that can potentially occur in all hospitals in Indonesia. This research aims to explore the factors that influence the occurrence of fraud from the perspective of the Hexagon model in JKN services in several hospitals in the Buton Islands. The Hexagon model, which consists of six key factors—opportunity, ability, arrogance, pressure, rationalization, and collusion—was used to systematically analyze the occurrence of fraud**.** This research uses an exploratory study method with in-depth interviews with 30 key informants. The research results show that the factor that most influences the occurrence of fraud is opportunity, followed by ability and arrogance. Although the model suggests pressure and rationalization as contributing factors, these elements remain ambiguous in this study due to insufficient supporting data**.** Collusion plays an important role in fraud but does not always occur. The study resulted in the development of a preliminary predictor model based on the findings, which can be used to identify risk factors for fraud in JKN services. This predictor model can be used to identify risk factors for fraud so that more effective prevention and response can be carried out.

Introduction

National Health Insurance of Indonesia, known as Jaminan Kesehatan Nasional (JKN), is a government program that aims to provide access to quality and fair health services for all Indonesian people.[1] This program has been implemented since 2014 and has significantly benefited the community. However, this program also faces various challenges, including fraud. Fraud can have a negative impact on the sustainability of the JKN program, such as increasing program costs, decreasing service quality, and losing public trust. The complexity of managing such a large-scale health insurance system, particularly in areas with unique socio-economic and geographic challenges, exacerbates these risks.

The problem of fraud in all Indonesian hospitals has the potential to occur anywhere, so this study is a challenge that has implications for the sustainability of accountable JKN hospital

administration and excellent services. Several studies conducted in Indonesia, most of which have identified findings based on the detection of potential or risk of fraud in hospitals. At a General Pulmonary Hospital of RSUP. Dr. Soeradji Tirtonegoro,[2] and at a Regional Hospital RSUD Tenriawaru,[3] health workers and coders commit both intentional and unintentional forms of fraud. The results of this fraud are in line with previous findings, which emphasize problems related to the dissemination of policies and programs that have not been evenly distributed to regions and policy aspects of service infrastructure in health facilities, referral systems, and HR and Capacity Building, financing aspects, and risk management of fraud.[4,5] However, these studies often focus on more central regions, while fraud in more remote areas, such as the Buton Islands, remains underexplored.

The Buton Islands were selected as the focus of this research due to their remote geographical location, limited access to healthcare resources, and lower economic levels, which create a distinctive context for understanding fraud risk within the JKN program. These conditions present heightened challenges for monitoring and enforcing compliance, potentially increasing the opportunities and motives for fraudulent activities. By focusing on this region, this study aims to fill the gap in the literature concerning how geographic and economic isolation may influence fraud in the context of national health insurance programs.

The Hexagon Model is a comprehensive and holistic model for understanding the factors that influence fraud incidents. The Hexagon Fraud model has been used to detect fraudulent financial reporting in Indonesian state-owned enterprises.[6] The Fraud Hexagon Theory proposed by Vousinas (2019) from the National Technical University of Athens, derived from the Pentecostal Theory (SCORE), includes Stimulus (pressure), Capacity (capability), Opportunity, Rationalization, and Ego.[7] In the context of JKN services, these dimensions can manifest in various ways: for instance, 'opportunity' may arise from gaps in regulatory enforcement, 'pressure' from financial strains on healthcare providers, and 'collusion' through coordinated efforts between staff to exploit the system. In this research, the model consists of six interrelated dimensions: pressure, opportunity, capability, rationalization, arrogance, and collusion. Each dimension can be a driving factor for fraud, both independently and mutually reinforcing.

This research aims to identify specific dimensions of the Hexagon Model that are most prevalent in the Buton Islands, and to examine how these factors interact with the local context. By doing so, this study contributes to a deeper understanding of fraud dynamics within the JKN system in

remote regions and offers insights into more effective prevention strategies tailored to such environments.

Materials and Methods

This study employed a qualitative exploratory design to identify conceptual indicators as predictors of potential fraud in several Buton Islands hospitals by exploring information through in-depth interview activities focused on the hexagon model aspects. The research was conducted at 3 (three) Regional General Hospitals (RSUD) and 1 (one) Private Hospital in the Buton Islands, which were selected purposively, namely Buton District Hospital, South Buton District Hospital, Central Buton District Hospital, and Faga Husada Hospital. The selection of these hospitals was based on criteria including hospital size, geographical distribution, and the diversity of services provided, ensuring a comprehensive exploration of fraud risk in different healthcare settings.

The development of dimensions and indicators through this exploratory study aims to capture the diverse perspectives of selected informants, who were hospital staff members, managers, and healthcare professionals, involved directly or indirectly in financial management or administrative duties. These perspectives serve as a foundation for preparing instruments that will contribute to a predictive model for fraud incidents (Table 1). The key informants were selected using purposive sampling based on their role in the hospital, their involvement in financial or administrative processes, and their knowledge or exposure to fraud risk factors. The total number of key informants in this research was 30 people.

The tools or instruments used in collecting qualitative data are as follows: i) In-depth Interview (Indepth-Interview) is a guide that is modified according to regional conditions and created based on identifying problems indicative of fraud; ii) Recording equipment consists of a notebook, a digital camera to record images during interviews, and a tape recorder to record the informant's voice; iii) Informed Consent is a form requesting willingness to become an informant from the researcher and a consent form to become an informant from the informant.

Data were collected through direct interview techniques using open-ended questions. In-depth interviews were conducted when information obtained was incomplete or required further clarification for thematic analysis. The informants were asked about their perceptions, experiences, and understanding of fraud within the JKN system. Interviews were carried out in

person or via telephone, and the results were documented into interview transcripts and matrices, which were then analyzed.

Data analysis was conducted using content analysis, focusing on thematic coding, classification, and the identification of patterns in the responses. The process of classifying answers was guided by the research questions and fraud indicators identified in the Hexagon model. The data were further analyzed to predict potential areas of fraud based on informants' responses. Validity testing was ensured through multiple measures: credibility (internal validity) was established by triangulating data from different informants and sources, while transferability (external validity) was enhanced by providing detailed descriptions of the study context, allowing for replication in similar settings.

Results

Based on the qualitative study (Table 2), the factors influencing the occurrence of fraud in JKN services in the Buton Islands are complex and interrelated. The most influential factor identified was opportunity, followed by capability and arrogance. Pressure was less conclusive, as some informants did not perceive it as a significant driver of fraud. Rationalization and arrogance often strengthen the primary factors, enabling individuals to justify fraudulent behavior. Collusion was identified as a supportive but not always necessary element for fraud to occur.

Discussion

Using the Hexagon model perspective, this qualitative study reveals the factors that influence the occurrence of fraud in National Health Insurance (JKN) services in various hospitals. These findings illustrate the complexity of the fraud phenomenon in the healthcare context. In alignment with previous studies, this research highlights how systemic factors such as internal hospital pressures and socio-economic conditions contribute to fraudulent behavior. In the context of pressure, research results show that pressure can be the main trigger for fraud, especially in individuals who feel a heavy workload or lack of well-being. Other research results show that the pressure experienced by employees comes from internal hospital pressures and external hospital pressures, for example, family needs and lifestyle, salaries for employees as a whole, and take-home pay (basic salary, remuneration, and side dishes) for employees. Specific Time Employment Agreement.[8] This finding echoes earlier studies, which suggest that socio-

economic pressures are significant contributors to fraud in low-resource health systems. However, it cannot be seen as the only factor influencing the decision to commit fraud. Other roles, such as faith and work environment, influence fraud.[9]

Furthermore, opportunity is also an important factor in this research. The study results show that individuals are more likely to commit fraud if they perceive an opportunity to do so. Several factors that can create this opportunity include poor management, lack of clarity in the distribution of financial services, and a weak supervisory system.[10,11] In health systems, corruption, or the abuse of power for private gain, includes bribes and kickbacks, embezzlement, fraud, political influence/nepotism, and informal payments, among other behaviors. This aligns with broader research on healthcare corruption globally, where weak oversight and lack of transparency are recurring themes. Drivers of corruption include individual and systems-level factors such as financial pressures, poorly managed conflicts of interest, and weak regulatory and enforcement systems.[12] Therefore, efforts to prevent fraud in JKN services need to pay attention to these aspects to reduce the opportunity for fraud to occur. It is essential for policymakers to strengthen management protocols and increase transparency in hospital operations to minimize these opportunities.

Capability is also an important factor in this study. The findings show that individuals with an interest, intention, or advantage in committing fraud are likelier to engage in such acts.[13] Apart from that, not understanding the rules and feeling dissatisfied with what is received can also affect a person's capability to commit fraud.[14] This diverges slightly from other studies that have found dissatisfaction to be less of a driver compared to institutional weaknesses and lack of proper governance. Therefore, there is a need for actions that educate individuals about the rules and monitor their satisfaction with the JKN system. Individual rationality in committing fraud is also an important concern in this research. The findings show that most respondents see fraud as something unnatural, but some see it as an action that can be justified in certain situations. This underlines the complexity of fraud's moral and ethical aspects.[15,16] Arrogance also appears as a factor that can cause someone to commit fraud. An individual's trait of arrogance may influence their decision to engage in actions that are detrimental to the organization or patients.[17,18] Apart from that, external factors such as pressure from superiors and individual interests can also play a role in encouraging fraud. Collusion, or cooperation between individuals or entities that have the potential to commit fraud was also identified as an important factor. The findings show that

collusion can be the main trigger for fraud.[19] Pressure from superiors, feelings of threat, and cooperation triggered by mutual interests are examples of ways collusion can influence fraud in the context of JKN services in hospitals. This finding is particularly relevant in regions like the Buton Islands, where social bonds and networks may intensify the likelihood of collusion.

The results of other research show that the pressure and rationalization variables have a positive and significant effect on opportunities, so improvements in the pressure and rationalization variables will create improvements in the opportunity variables.[20] The pressure, rationalization, and opportunity variables have a positive and significant effect on fraud prevention, so improvements in the pressure, rationalization, and opportunity variables will create improvements in the fraud prevention variable. This suggests that by addressing pressure and rationalization through policy interventions such as improving working conditions and reinforcing ethical standards opportunities for fraud can be significantly reduced. In the context of the Buton Islands, socio-economic and cultural factors also play a unique role in influencing fraud. The remote geographic location and lower economic development of the region may exacerbate pressures on healthcare workers, leading to higher instances of fraudulent activities. This underscores the importance of considering regional variations when designing anti-fraud policies for JKN services.

Overall, this research illustrates the complexity of factors contributing to fraud in JKN hospital services. Understanding these factors is important in preventing and addressing fraud in this critical health sector. Based on the findings, specific strategies for fraud prevention should include strengthening oversight mechanisms, enhancing transparency in financial management, and providing regular ethical training for healthcare workers. Additionally, policies aimed at improving staff welfare and reducing socio-economic pressures can serve as preventive measures against fraud. This study contributes to understanding fraud behavior in the healthcare context and can assist policymakers and practitioners in developing strategies to combat effective fraud.

Conclusions

This research succeeded in identifying six key factors that influence the occurrence of fraud in National Health Insurance (JKN) services in several hospitals, namely pressure, opportunity, capability, rationality, arrogance, and collusion. These factors interact with each other and form a complex framework for understanding the phenomenon of fraud in the health sector. The

findings highlight the importance of addressing opportunity and capability as the primary drivers of fraud, supported by influences from rationalization, arrogance, and collusion.

Based on these findings, several actionable recommendations can be made to mitigate fraud in JKN services: i) Strengthen the supervision and monitoring systems, hospitals should enhance internal control mechanisms, ensuring transparency in financial management and reducing the opportunities for fraud; ii) Improve staff welfare and working conditions, reducing pressures related to workload and financial strain, such as by providing fair compensation and better working conditions, may alleviate the stress that leads to fraud; iii) Enhance ethical training and education, regular training programs that focus on ethics and the risks of fraud should be implemented to raise awareness among healthcare workers, particularly in remote regions like the Buton Islands; iv) Implement stricter sanctions for fraud, clear and consistent consequences for fraudulent activities should be established to deter potential offenders and reinforce accountability within the healthcare system.

For future research, it would be beneficial to explore the socio-economic and cultural factors that may intensify these fraud drivers, especially in remote areas like the Buton Islands. More in-depth quantitative studies could assess the magnitude of each factor's influence and help prioritize interventions. Additionally, further investigation into how collusion develops within healthcare teams and its role in enabling systemic fraud would provide critical insights for policymakers aiming to prevent fraud on a larger scale.

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Table 1. Operational definition of fraud dimension variables based on the hexagon model perspective.

Variable	**Operational definition/objective framework**
Pressure	Forms of encouragement (can be financial, targets, awareness, unclear regulations, work pressure, helping others) to commit fraud
Opportunity	Low self-awareness and internal control result in taking advantage of opportunities (weak monitoring and evaluation, lack of transparency, organizational structure problems, unclear rules) to commit fraud
Capability	The capability (position), intelligence, self-confidence, personality, rhetoric) of a person to commit fraud
Rationalization	The form of action of a person who justifies and feels it makes sense to carry out fraudulent activities
Arrogance/Ego	The nature of a person's ego or character that causes greed and feeling better than other people
Collusion	An agreement/cooperation/compromise that benefits one particular party

Table 2. Qualitative study results from the perspective of the Hexagon model.

Dimension	Responses	Summary/Key Findings
Pressure	Thirteen informants said that fraud should not be committed; five informants stated they did not agree with fraud but were pressured by the patient's condition; five said fraud was due to pressure; two said fraud was committed out of ignorance, with other varied responses. Six informants stated there was no pressure to commit fraud; five mentioned pressure from superiors; two said the pressure could be managed. Ten informants said pressure did not influence fraud, while nine said it did, and	Pressure was found to be a contributing factor in a subset of cases, particularly linked to workload and superior influence.

	five were uncertain. Other factors included heavy workload, lifestyle, income, claims system, and helping patients.	
Opportunity	Twenty-one informants said that opportunity influenced fraud occurrence; five said it "maybe" did; the remainder indicated empathy. Factors included poor management, nepotism, weak monitoring, severity level manipulation, and position/authority misuse.	Opportunity emerged as the most significant factor driving fraud, due to poor oversight and managerial issues.
Capability	Twenty-seven informants agreed that capability influenced fraud; three said there might be an influence. Factors included authority, attitude, intelligence, personality traits, and faith. Other factors: dissatisfaction, lack of understanding of rules, and desire for profit.	Capability plays a central role in fraud, particularly among individuals with authority and personal motivations.
Rationalization	Twelve informants said perpetrators always rationalize their actions; others gave varied responses. Fifteen informants said deliberate fraud was abnormal, while several said it was normal depending on the situation.	Rationalization helps justify fraudulent actions, though views on its normality are mixed.
Arrogance	Twenty-two informants agreed arrogance could cause fraud; five said "maybe," two disagreed, and one was unsure. Arrogance was tied to selfishness, greed, and authority abuse.	Arrogance enhances fraud tendencies, particularly among individuals with positional power.
Collusion	Twenty-two informants said collusion played a role; seven said "maybe," and one said "no." Collusion typically occurred due to peer pressure or superior influence.	Collusion is a facilitative factor but not always present.