

Maximizing Security Operations to Promote Socio-Economic Development in Mining Firms in Ghana

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Abstract

The study investigated maximizing security operations to promote socio-economic development in mining firms in Ghana. The study respectively drew 1082 security personnel drawn at random from the selected mining firms. Using the sampling ratio proposed by Cochran (1963: 75) to arrive at variability $p = 0.5$ (maximum variability) and with the desire of 95% confidence level and $\pm 5\%$ precision. Hence, this study was based on a sample population of 216 security personnel of the five selected mining firms in Ghana. 91 personnel from the AngloGold Ashanti, 57 from Newmont, 31 from Ghana Bauxite, 19 from Ghana Manganese, and 18 from Future Global Resource. The study employed questionnaires as a data collection tool. The study gathered 146 responses out of 216 questionnaires administered, representing 68%. The data were analyzed using frequency tables, pie charts, bar charts, percentages, and line graphs. The study concluded that not all mining firms have installed security infrastructure to the fullest. Thus, where there might be CCTV, there might not be any form of electronic fencing, adequate security gates, and doors, as well as GPS. It was also revealed that the respective mining firms were faced with major challenges especially when the community feels insecure or cheated by the mining firms. The

study recommends that the mining sectors should invest in well-resourced security infrastructure development to enable the security actors to exercise equal responsibility for warding criminals, firm properties, and employees, and enforce mining laws to promote the socio-economic activities of these mining sites.

Keywords

Mining Security, Security Actors, State Security Actors, Non-State Security, Socio-Economic Development

1. Background of the Study

Ghana has a broad variety of mineral deposits, which includes oil, gold, gas, manganese, bauxite, and diamonds; nevertheless, there is a major contrast between large-scale mining (LSM) and artisanal and small-scale mining (ASM) (ASM in 2016, LSM comprised 16 firms that generate bauxite, gold, oil, manganese, and gas from 11 mines (Hilson et al., 2019). In contrast, the ASM sector is primarily casual, largely illegal, and, most significantly, extremely diversified (Ferring et al., 2016). It is known locally as Galamsey. It is practiced in a variety of ways, with varying degrees of mechanization and labor organization (Yankson & Gough, 2019). Ghana is ranked ninth in the world for gold deposits and second on the continent behind the Republic of South Africa (Alhassan, 2014). Galamsey and the making of a deep state in Ghana: implications for national security and development. Mining for gold and other precious metals has been a characteristic of a group, individual, or family ownership in local areas for millennia, long before large-scale foreign activities were introduced shortly after British colonial rule (Owusu & Dwomoh, 2012).

The security of mining companies is crucial. Several factors hinder the security of these Ghanaian companies. These insecurities can be seen in violent clashes between LSM and ASM over geographical territory and potential encroachment, tensions with Chinese miners who use carrying weapons force to protect their entry to resources (Antwi-Boateng & Akudugu, 2020), and violent clashes among local communities and LSM company security guards (non-state security actors) over entry to land or dissatisfaction with a lack of work and loyalties (Milner et al., 2019). Another prominent source of conflict is migrant or transitory mining, which draws armed robbers who endanger both miners and surrounding populations (Nyame & Grant, 2014). According to police, armed robberies have increased in illegal mining areas, with guns brought in by Chinese miners to defend themselves. Along with the rise in the use of weapons, there has also been an increase in the trafficking and use of illicit drugs (Doroudgar et al., 2018). Against this background, this study determines the use of security operations i.e., state and non-state security actors to promote socio-economic development amongst selected mining firms in Ghana.

2. Problem Statement

Ideally, the mining sector essentially the mining of diamond, gold, manganese, and crude petroleum contributes substantially to the national economy. Unfortunately, these firms operate in some of the world's most complex, contentious, and fragile areas. The sector is especially vulnerable to changes in the geopolitical and international security landscape. Notably in the environment, people's life and security become a greater concern (Ros-Tonen et al., 2021). For instance, according to a recent AON report, the extractive industry was the third most affected industry in 2015, with 87 terrorist and political violence attacks. This situation does not change in the years 2019 and 2020 (Parker, 2020). Antwi-Boateng and Akudugu (2020) revealed violent clashes between LSM and ASM over geographical territory and potential encroachment, tension with Chinese miners who use armed force to protect their entree to resources. Baah-Ennumh and Forson (2017) also reported discontent and dissatisfaction on the part of security agencies in charge of law enforcement especially the use of dynamite and other mining apparatus that destroy other lives and properties as a cause of these mining security operations. Antwi-Boateng and Akudugu (2020) revealed severe battles between LSM and ASM over geographical territory and prospective incursion, as well as tensions with Chinese miners who employ armed forces to defend their access to resources.

3. Research Objectives

- To determine the activities of state and non-state security actors in the mining sector.
- To ascertain the challenges these security firms, face in their operations in the mining sector in Ghana.

4. Literature Review

4.1. Overview of Security Organizations in Ghana

Ghana's present security and judicial system is a holdover from the colonial period, when institutions secured and protected the nation's economic exploitation (Ibeanu & Momoh, 2018). The Ghana Army evolved from the Gold Coast Regiment of the Royal West African Frontier Force, which was established to maintain and extend British colonial power in West Africa (Aning, 2016). The Ghana Police Service, founded in 1831, placed minimal emphasis on community service, as shown by a paramilitary attitude (Tankebe, 2018). Furthermore, colonialism introduced western ideas of social control and justice administration to replace indigenous ways of sustaining peace and order, which were expressed in the institution of chieftaincy. Dzivenu (2018) Under the Native Authority Ordinance, chiefs were only permitted to manage customary conflicts and complaints in full conformance with western normative legal traditions. As a result, the court and police systems were developed to safeguard the colonists' interests while also persecuting locals who have seen a threat to efforts to capitalize on

taxes revenues and natural resource extraction (Ezeilo, Nwoke, & Anya, 2018). After independence, the country's political elite preserved these institutions and processes to safeguard their limited interests and for "national unity" and little has altered in the nation's stance on security provision (Atuguba, 2017). The President, Vice-President, Ministers of Foreign Affairs, Defense, Interior, and Finance, as well as service chiefs from the Armed Forces, Police Service, Prisons Service, Customs, Military Intelligence, and External Intelligence, comprise Ghana's National Security Council. Among the tasks are the following: evaluating and executing suitable actions to protect Ghana's internal and external security, as well as assuring the collecting of data regarding Ghana's national security (Minter, 2017). The military is in charge of defending opposing foreign aggression, the police are responsible for conserving law and order, and intelligence services are accountable for dealing with problems essential to state security.

4.2. Security Actors

The study focused on the two leading forms of security actors in the nation. These are non-state and state security actors.

4.3. State Security Actors

The two main actors in offering security to both residents and businesses are the state security apparatus, sometimes called public security agencies, and the expanding private security organizations (Tsikata, 2019). Frontline public security institutions consist of the National Security Council, the Ghana Armed Forces, the Ghana Police Service, the Bureau of National Investigations (BNI), the Ghana Immigration Service (GIS), the Ghana National Fire Service (GNFS), and the Prisons Service. These institutions are designed to safeguard the country from both internal and external threats, as well as to keep society as free of crime as possible. These entities have the authority to arrest and utilize harsh instruments provided by the state. They have the power to file and execute criminal accusations against people and organizations whose actions are believed to jeopardize national security (Aning, 2016). Apart from these institutions, there is a number affiliated with the national security system. The Attorney General Office is one of them, as are the numerous district and regional security committees (Sule, 2019). In order to deter crime, personnel in these establishments are also granted the right to arrest. Citizens have a critical role to play in the delivery of public security, which is a fundamental principle (Bryden, 2010). Citizens are also granted the authority to arrest by providing data and cooperating with state security agencies. However, the state's provision of security has proven to be completely inadequate over the years. As a result, private security firms have emerged (Malec, 2013). The literature emphasized on the responsibilities of state security personnel, however, there was a complete gap of inadequacy of state security actors. Hence, there is a need for non-state security actors to augment. This study fills the gap of contributions of non-state security actors working in tandem with state security in criminal warding, protection of employees and

properties.

4.4. Non-State Security Actors

Security privatization has shown itself in two major shapes in recent times, each motivated by a distinctive set of actors and objectives (Ibeanu & Momoh, 2018). A more formal definition relates to private security groups, which principally include private military corporations (PMCs) and private security firms (PSCs). The second category consists of non-state entities that provide security, generally to the poor and disenfranchised who cannot afford commercial security services. Their services are frequently vague, and they are often described as “informal actors” (Olonisakin et al., 2019). Individual security plans, community watch organizations, traditional security methods, and lynch mobs are a few examples. Most of the literature on African security privatization has concentrated on the actions of private military and commercial private security corporations, with little emphasis made on non-commercial, non-state private players. Nonetheless, these systems are the principal sources of justice and security for the poor in many developing countries (Olonisakin et al., 2019). PMCs and PSCs are individuals and companies arranged along corporate lines and trying to offer services independent of the state (Gumedze, 2017), with PMCs primarily providing military services to organizations and states and PSCs mainly offering commercial security services to individuals and organizations. The exercises of further combat-oriented PMCs in Africa are problematic, with charges that they promote violent behavior in crisis areas, conduct human rights violations, and constitute modern-day armed forces (Musah et al., 2000).

Aside from such concerns, PMCs can play an inspirational role in helping security, especially in conflict zones, by performing services such as demining and securing international and humanitarian organizations such as the UN. Countries that are not involved in violent conflict are reorganizing their security forces. Much less contested are the activities of local and worldwide PSCs, which are more self-protective and involve, among other things, protecting services, bodyguards, cash-in-transit protection, and alarm response (Kirunda, 2018). However, some PSC activities may contribute to human rights breaches (Alao, 2012). Another type of security provider that appears to exist in many African countries is communal security measures (Baker & Scheye, 2007). Such communal, usually non-commercial security systems are mainly found at the level of local communities and typically offer security not for earnings, but on an exclusivist ground for political and wider socioeconomic purposes, and regularly in response to the same exclusionary security provision that inspires the commercial security market (Bourne, 2012). As a result, unlawful renters are more exposed to police intervention and mistreatment, and they are less likely to seek help from official institutions for their justice and safety requirements. Community policing, vigilante squads, and community watch committees are all instances of community systems (Olonisakin et al., 2019). Some concerns, however, are connected with a few of these communal security protocols, such as mob

actions and the criminal activities of some organizations that migrate from community security establishment to operations such as robbery, abductions, and blackmail (Ibeanu & Momoh, 2018). Despite these concerns, the majority of the poor regard such systems as offering realistic solutions and, as a result, supporting their services.

Private Security Companies (PSCs) help to close the security gap created by police inability by performing tasks that the police either could not have performed, such as offering CCTV operations, or, if the police did undertake such duties, such as guarding national infrastructure like airports, would have extended their already limited ability even further. A Presidential Commission examining the Police Service's duties advised in 1997 that PSCs be given the authority to take over some routine jobs previously undertaken by the police, such as bank security. It proposed altering Legislative Instrument 1571 to enable security officers to handle guns in this vein (Aning, 2016).

The idea has yet to be executed. Private security firms assist the police by freeing them of routine responsibilities, enabling them to concentrate on key policing tasks like gathering intelligence and investigations. However, since PSC activities are urban-focused and profit-driven, and also because their services are only available to the elite, crime is usually transferred from wealthy districts to impoverished communities, exacerbating existing socioeconomic imbalances (Uzuegbu-Wilson, 2020). Moreover, due to the lack of minimum training fundamentals or a legal requirement for PSCs to instruct their security officers before dispatching them, coupled with the Ministry of Interior's poor supervision of their activities, some PSCs' profit motivation may result in some businesses attempting to capitalize on employees by paying low wages them and supplying poor excellent service to the client. For those who cannot pay for the services of PSCs, watchmen provide cost-effective guarding and protection.

According to Steden and Sarre (2017), the risk faced by these private militaries and police forces is that they operate outside of the confines of constitutional accountability and public control, putting both the state and its citizens at risk. Worse, because these private troops are available for hire, they market their services to anyone who can buy them. As a result, they pose a serious security risk in Africa. The involvement of PMCs in training various security organizations, such as the military, has both positive and negative consequences for the country's security. On the bright side, such training may be claimed to improve these agencies' operational and strategic competence, resulting in improved security indirectly (Olonisakin et al., 2019).

Their lack of emphasis on broader aspects of security, such as civil rights training, renders their services less useful to the majority of Ghanaians. Furthermore, the efficiency of their operations cannot be assessed because there is no parliamentary oversight of their actions, especially since the Ghanaian Parliament has no oversight of their activities. Organizational security operations can take numerous forms, some of which are described below but are not ex-

haustive.

4.5. Manned Guarding Services

Essentially manned guarding is the process of preventing illegal entrance or occupation of the property, therefore anticipating injury or upheaval, potential robbery, and safeguarding people from violence or damage. This comprises providing physical closeness or performing any type of watch or scouting in order to discourage or generally inhibit it from occurring or to provide data about what has occurred if it occurs (Olonisakin et al., 2019). Having a security guard on duty is a tried-and-true way to deter trespassers. Unmanned security techniques such as CCTV, alarms, or security entryways cannot dissuade thieves, vandals, or trespassers in the same way that the presence of security can. Gatekeepers can respond promptly if there is an incident or a break in the premises (Idowu, 2018).

Guards are used to protect people and property (for example, critical infrastructure), and they are increasingly being used to assist law enforcement and emergency personnel. As chief executives are seen as valuable assets, companies in the United States are increasingly hiring guards to protect them (Kappeler & Potter, 2017). Some companies, like Oracle and Ford Motor, invest more than \$1 million per year in executive security. Executive protection typically entails scanning visitors at gatehouses, patrolling the perimeters of executives' personal residences, offering 24-hour security, and assisting them on out-of-town trips (Kappeler & Potter, 2017).

4.6. Electronic Security Solutions

Electronic security industry leaders use cutting-edge technology to defend people and assets. They provide a wide range of electronic security solutions to meet the needs and budgets of businesses. Electronic security solutions require the use of detectors and transmit a signal at the site or a remote area (Kwon et al., 2016). Central stations, which are open 24 hours a day, can monitor a wide range of alarms and then notify the appropriate parties, such as the police, fire, and emergency medical services.

4.7. Human Insecurity

The review reveals three types of personal insecurity. The first is related to violent clashes between artisanal and small-scale miners and large-scale miners. There are four reasons for such violent interactions. For starters, they take place involving armed illegal small-scale miners and a military task group combating illegal mining (Kemp & Owen, 2019). Second, there are confrontations with Chinese miners, who employ armed forces to protect their entrance to resources and face community upheavals (Antwi-Boateng & Akudugu, 2020). Mistreatment of Ghanaian workers, cultural differences, land disputes, and negative environmental repercussions all contribute to such uprisings (Hilson et al., 2019).

Third, violent fights occur involving local residents and LSM company security officers over land rights or unhappiness with a lack of work (Twerefou et al., 2015). Sometimes resentment is aimed at law enforcement agencies as in the example of property owners who experienced blasting harm and saw the local security agency as involved in the mining company's continued use of dynamite (Baah-Ennumh & Forson, 2017). The fourth source of conflict is transient or migratory mining, which draws armed robbers that endanger both miners and adjacent populations (Nyame & Grant, 2014). The second sort of personal insecurity is concerned with mining's effects, such as land grabs (Hausermann et al., 2018) heavy workload, and inadequate and risky conditions of employment (Amponsah-Tawiah et al., 2011). In this regard, Antabe et al. (2020) define "so-lastalgia" as "distress over changes in the environment and related health risks" (see also 5.2). The third type of personal insecurity is caused by underground blasting activities, which make residences dangerous (Baah-Ennumh & Forson, 2017).

5. Methodology

The study used a quantitative technique, the investigator examined issues such as the study's response rate and representativeness since the findings were generalized. The total population of the study was 1994 security personnel drawn at random from the selected mining firms. Using the sampling ratio proposed by Cochran (1963: 75) that to arrive at variability $p = 0.5$ (maximum variability) and with the desire of 95% confidence level and $\pm 5\%$ precision. The resulting sample was demonstrated in Equation 1 to arrive at a sample of 216 mining security personnel. Hence, this study was based on a sample population of 216 security personnel of the five elected mining firms. 91 personnel from the Anglo-gold Ashanti, 57 from Newmont, 31 from Ghana Bauxite, 19 from Ghana Manganese, and 18 from Future Global Resource. Given the interconnected research approaches, the sample size has a higher impact on detecting significant correlations, or inconsistencies, (Kotrlík & Higgins, 2001). It is also critical to assume bias, particularly when determining sample size and coping with non-response rate (Ngulube, 2005). Some research, particularly that of web or online surveys, appear to have recorded low response rates of less than 50%, according to some literatures. Doerfling, Kopec, Liang, and Esdaile (2010), for instance, recorded a response rate of 25.6 percent. Alternatively, Ngulube (2005) contends that when samples are too large, resources may be wasted; yet, the utility of the results is also diminished when samples are too small. In consideration of the rate of responses in obtaining data for the study, the proportion of responses obtained can be classified as good. Questionnaires were used to collect data for the study. The data acquired were 146 responses out of 216 questionnaires administered. The response rate recorded for this study was 67.6%, as indicated in the table below. The respondents were security personnel from the five mentioned gold mining firms. Hence, the study's analyses were based on the number of responses ob-

tained.

Formula for Calculating Sample for Proportions

For populations that are large, Cochran (1963: 75) developed Equation 1 to yield a representative sample for proportions.

$$n_0 = \frac{Z^2 pq}{e^2}$$

Which is valid where n is the sample size, Z is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the desired confidence level, e.g., 95%), e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is $1 - p$. The value for Z is found in statistical tables which contain the area under the normal curve.

Equation 1.

$$n_0 = \frac{Z^2 pq}{e^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 216 \text{ security personnel.}$$

6. Data Analysis

6.1. Mining Companies Understudy and Response Rate

The percentage returns from all the mining firms were not the same, the highest return of 91 was from the AngloGold Ashanti, 57 from Newmont, 31 from Ghana Bauxite, 19 from Ghana Manganese, and 18 from Future Global Resource. The highest return from AngloGold can be attributed to the higher population of staff in the mining firm and the longer number of years they have been in operation. The highest response from AngloGold Ashanti could be attributed to the high population of staff at the mining firm.

The gender composition of the respondents is shown in **Table 1**. The gender distribution shows that 146 (74.7%) percent of respondents were males and 37 (25.3%) were females. This suggests that the majority of respondents were male. Perhaps, it could be due to the rationale that wholistically, mining is a male-dominated business; hence, the majority of the respondents were men.

Out of the total respondents (146) (**Table 2**), 28.1% representing the second highest were between the ages of 25 to 35 years while the majority of 42% were between 36 to 45 years. On the other hand, 34 representing 23.3% were in the range of 46 to 55 years, and a minority of 9 representing 6.1% were 56 years and above. Thus, younger personnel availed themselves of the survey than older personnel. This also suggests that the mining industry is dominated by young energetic personnel who are strong enough to contribute their quota to the socio-economic development of their community and Ghana at large.

The study (**Table 3**) showed the level of skilled and unskilled personnel available at these mining sites. In this regard, 67.8% representing the majority were skilled personnel, whereas 32.2% were unskilled workers. This suggests that the security personnel available at these mining sites were professionals with skilled backgrounds.

Table 1. Mining companies and response rate ($n = 146$).

	Frequency	Percentages
Anglogold Ashanti	57	39.1
Newmont	31	21.2
Ghana Bauxite	25	17.1
Ghana Manganese	19	13
Future Global Resource	14	9.6
Total	146	100

Source (Field data). Gender of Respondents ($n = 146$).

Table 2. Gender of Respondents ($n = 146$).

Response	Frequency	Percent
Male	109	74.7%
Female	37	25.3%
Total	146	100%

Source (Field data). Age of Respondents ($n = 146$).

Table 3. Age of Respondents ($n = 146$).

Response	Frequency	Percent
25 - 35 years	41	28.1%
36 - 45 years	62	42.5%
46 - 55 years	34	23.3%
56 and above	9	6.1%
Total	146	100%

Source (Field data). Level of skilled and unskilled workers ($n = 146$).

6.2. State and Non-State Security Actors Involved in Mining Operations

The respondents (**Table 4**) were asked which form of security operations they belong to whether state security or non-state security. The majority of 96 (65.8%) were identified as non-state security operations, whereas 50 (34.2%) were identified as state security actors. The result reflects that non-state security actors are predominantly involved in the security operations at the mining sites.

6.3. Categories of State Security Actors

When asked which agency the state actors in mining security operations belong to, 76 (52%) representing the majority belong to the Ghana Armed Forces, 47 (32%) were in the Ghana Police Service, and 23 (16%) belonged to the National Intelligence Bureau (NIB) (**Table 5**). The result confirms that the state actors

Table 4. Skilled and unskilled personnel ($n = 146$).

Response	Frequency	Percent
Skilled workers	99	67.8%
Unskilled workers	47	32.2%
Total	146	100%

Source (Field data).

Table 5. State and non-state security actors ($n = 146$).

	Frequency	Percentages
Non-state security	96	65.8
State security	50	34.2
Total	146	100

Source (Field data).

involved in mining operations are the Ghana Armed Forces (GAF), Ghana Police Service (GPS), and the National Intelligence Bureau (NIB) the minority (**Figure 1**).

6.4. Category of Non-State Actor

When asked which security organization or agency in mining security operations they belong to, 47% responded they belong to private security companies (PSCs), 22% to individual security (watchmen) while 18% said internal organizational security. However, 13% said the neighbourhood watch committees are involved in the security operations in the mining firms. The result affirms that non-state actors involved in security operations belong to private security companies (PMCs), individual security (watchmen), internal organizational security, neighbourhood watch committees, and traditional security mechanisms (**Figure 2**).

7. Activities of Security Actors

7.1. Nature of Security Services Rendered by State Actors

The study intended to further ascertain the nature of security services rendered, the majority of the respondents indicated about 56 (38.3%) of them responded criminal warding had been their major engagement, and 49 (33.6%) indicated guarding the firm's properties and employees, and 41 (28.1%) indicated enforcing the illegal mining laws against galamsey operators. It is important to note that the activities of the security actors were made to ward off criminals at the mining sites.

7.2. Security Coordination (Joint Task Force)

The study (**Table 6**) aimed to ascertain how regular or irregular both state and

non-state security actors work together. About 68% of them admitted to irregular team-up work in terms of the patrol of the mining territories and warding off territorial rivals. Alternatively, 32% indicated regular teamwork among both state and non-state security actors. This suggests that there is a low correlation between both state and non-state security actors in combating crime activities at the mining sites. A summary of the data is presented in **Figure 3**.

Table 6. Frequency of activities of security actors (*n* = 146).

	Frequency	Percentages
Ward off criminals	56	38.3
Enforce illegal mining laws	41	28.1
Guard firms' properties and employees	49	33.6
Total	146	100

Source (Field data).

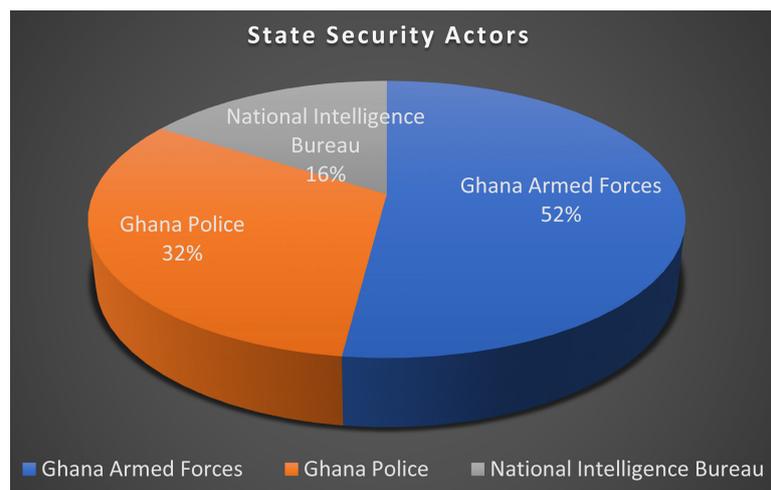


Figure 1. State security actors. Source (Field data).

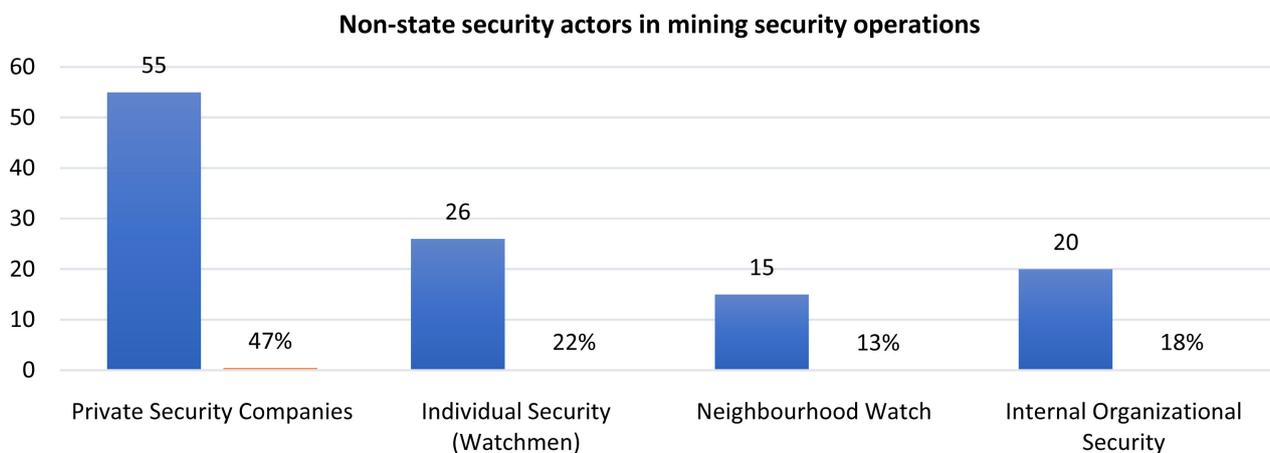


Figure 2. Non-state actors involved mining security operations (Field Survey, 2021). Source (Field data).

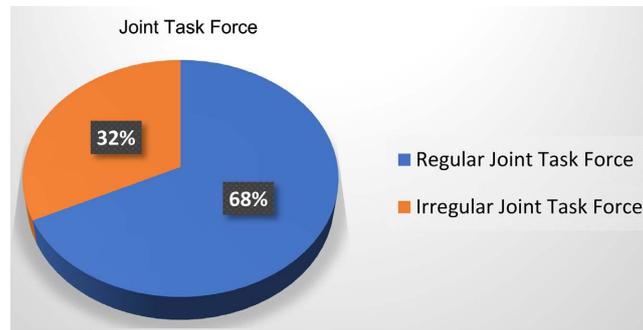


Figure 3. Security coordination (Joint task force). Source (Field data).

7.3. Security Challenges Faced by Mining Companies (n = 146)

The study aimed to ascertain the security infrastructure and equipment available to aid operations in the mining areas. The respondents were asked to state the security infrastructure they used in their operations. About 49 (33.6%) admitted that there is inadequate closed-circuit television (CCTV) at the various mining sites. 40 (27.4%) disclosed inadequate electronic fencing, 32 (21.9%), inadequate security gates and doors, and about 25 (17.1%) indicated poor Global Positioning System. The result is an indication that not all mining firms have installed security infrastructure to the fullest. Thus, where there might be CCTV, there might not be any form of electronic fencing or both (**Figure 4**).

8. Human Security Challenges

The objective aimed to ascertain human security challenges faced by mining firms. In this vein, the following indicators were used to measure the human security challenges, employee theft, armed robbery by the Galamsey miners, attacks by community members, and foreign illegal mining miners. Another human security factor that inhibited the major operations of the mining firms included the effective and ineffective state and non-state security operations.

8.1. Human Security Challenges (n = 146)

The respondents were asked to indicate the kinds of human security challenges faced by the mining firms. About 57 (39%) of the respondents mentioned that theft by employees had been the greatest challenge, 42 (28.8%) indicated armed robbery by the galamsey miners, 36 (24.7%) indicated attacks by community members, and 11 (7.5%) indicated clash with foreign illegal miners. The result suggests that these mining firms were faced with major challenges especially when the community feels insecure or cheated by the mining firms. Hence, there are theft and consistent raids of concessions by community illegal miners (**Figure 5**).

8.2. Effective and Ineffective State and Non-State Security Actors

The objective aimed to determine whether the presence of both state and non-state security actors secured these mining firms' effective or ineffective security services. The respondents were asked to state whether the presents of both

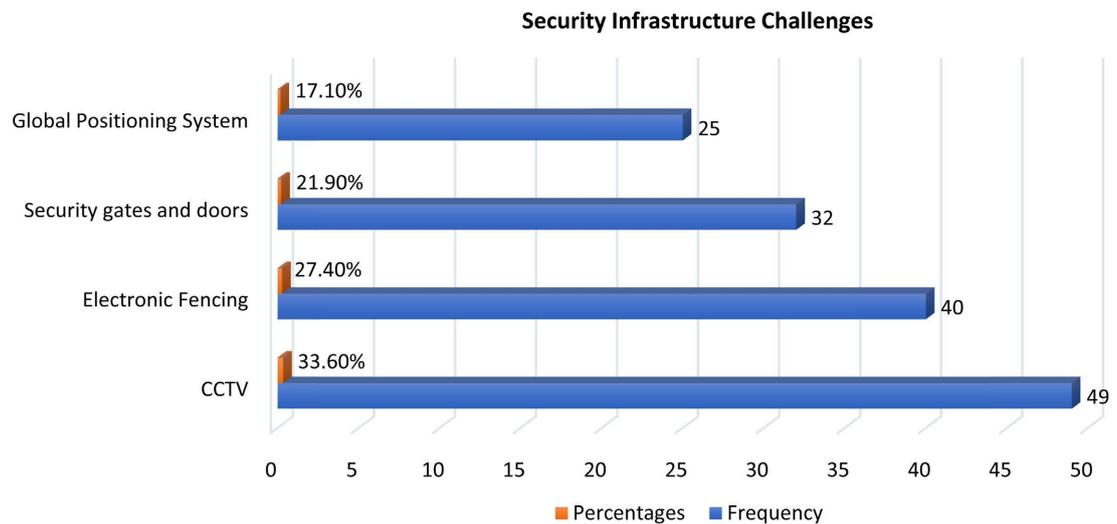


Figure 4. Security infrastructure at mining firms. Source (Field data).

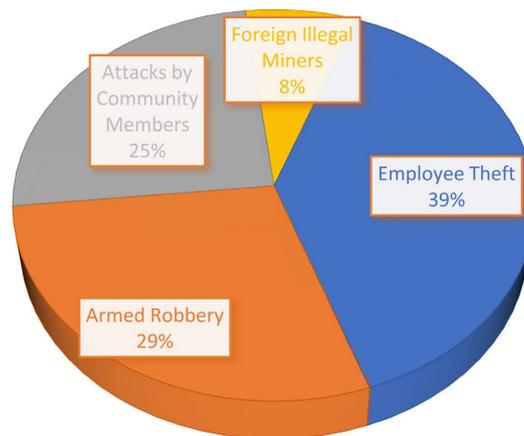


Figure 5. Human security challenges. Source (Field data).

state and non-state security actors contributed to effective or ineffective security, 56 (38.4%) admitted that security operations had been very effective despite constant theft by employees, 42 (28.8%) indicated effectively, 37 (25.3%) indicated little effective, and 11 (7.5%) indicated not effective at all. It can be assumed from the results that the presents of security operations at the mining firms were effective, however, these mining firms suffered from various kinds of ineffective security because of inadequate CCTV, armed robbery, community attacks, inadequate fencing, and clash with foreign illegal miners (Table 7).

9. Discussions of Results

The demographic results showed that the highest return of respondents from AngloGold can be attributed to the higher population of staff in the mining firm and the longer number of years they have been in operation. The study further showed that the majority of the respondents were male. Perhaps, it was certain that wholistically, mining is a male-dominated business. It was also revealed that

Table 7. Effective and ineffective state and non-state security actors ($n = 146$).

	Frequency	Percentages
Very effective	56	38.4
Effective	42	28.8
Little effective	37	25.3
Not effective at all	11	7.5
Total	146	100

Source (Field data).

the younger security actors availed themselves of the survey more than the older security actors. The study also convinced that the mining industry is dominated by young energetic security actors who are strong enough to contribute their quota to the socio-economic development of their community and Ghana at large. With regard to the skills possessed by the security actors, the study brought to light that the majority of the security actors were skilled and professional in their mining security operations in maintaining a conducive working environment.

Interestingly, the study opened that majority of the security actors undertaking security operations at the respective mining sites were non-state security actors, with a few considerable numbers belonging to the state security fraternity. Evidence gathered reflects that non-state security actors are predominantly involved in the security operations at the mining sites. Evidence gathered coincides with the previous by Bourne (2012) that another type of security provider that appears to exist in many African countries is communal security measures. Such communal, usually non-commercial security mechanisms are most common at the native civic level and generally offer additional security not for earnings, but on an exclusivist basis for political and wider socioeconomic reasons, and frequently in response to the same exclusivist provision of safety that inspires the commercial security market. As a result, illegal renters are more exposed to police intervention and abuse, and they are less likely to seek help from state institutions for their justice and safety requirements. Community policing, vigilante squads, and neighborhood watch committees are all instances of communal systems (Olonisakin et al., 2019). Private Security Companies, according to Uziegbu-Wilson (2020), assist the police by freeing them of routine responsibilities, allowing them to focus on key policing tasks such as gathering intelligence and investigations. However, because PSC operations are urban-focused and income, and because their services are only available to the elite, crime is usually transferred from wealthy districts to impoverished communities, exacerbating existing socioeconomic imbalances. It can be assumed from the study that these non-state security actors are predominant in these mining firms because they are located in the local communities. Hence, they act as a relief to the state security on routine duties by giving them space to focus on core policing

tasks such as intelligence gathering and surveys.

With respect to the categories of state security actors involved in the mining security operations, the study highlighted that the majority belonged to the Ghana Armed Forces, followed by the Ghana Police Service, and the least was from the National Intelligence Bureau. Evidence gathered is in line with the earlier study by [Tsikata \(2019\)](#) that the state security apparatus, also known as public security institutions, and the evolving private security firms are the two central characters in providing security to citizens and businesses. [Tsikata \(2019\)](#) reiterates that the National Security Council, the Ghana Armed Forces, the Ghana Police Service, the Bureau of National Investigations (BNI), the Ghana Immigration Service (GIS), the Ghana National Fire Service (GNFS), and the Prisons Service are among the frontline public security institutions. This suggests that the mentioned mining operations were submerged with varied categories of state security actors including the GAF, GPS, and the NIB. Hence, these state security actors were represented at the mining sites to promote peace and socio-economic development.

Alternatively, the study declared major categories of non-state security actors involved in the security operations in the mining firms as private security companies (PSCs), followed by individual security (watchmen), internal organizational security, and the least the neighbourhood watch committee. Evidence gathered agrees with the earlier study by [Ibeanu and Momoh \(2018\)](#) that in contemporary times, security privatization has demonstrated itself in two broad forms, each inspired by a different set of actors and motivations. A more formalized meaning refers to private security organizations, which primarily consist of private military companies (PMCs) and private security companies (PSCs). The second group is made up of non-state actors who provide security, typically to the poor and marginalized who are unable to obtain commercial security services. Their services are sometimes ill-defined, and they are commonly referred to as informal actors ([Bryden, 2010](#)). This suggests that respective mining firms have demonstrated their own capacity in providing their own security apart from the state security actors which could go a long way to promote their socio-economic development.

The study further revealed that the major nature of security activities rendered by the security actors was criminal warding, followed by guarding the firm's properties, and employees and enforcing illegal mining laws against galamsey operators. It is important to note that the activities of the security actors were centered to ward off criminals at the mining sites as against guarding the firm's properties, to promote growth and expansion. Evidence was acquired to confirm the earlier study by [Kappeler and Potter \(2017\)](#) that guards were used to protecting people and property (for example, critical infrastructure), and they were increasingly being used to assist law enforcement and emergency personnel. As chief executives are seen as valuable assets, companies in the United States are increasingly hiring guards to protect them. Some companies, like Oracle and Ford Motor, invest more than \$1 million per year in executive security. Execu-

tive protection typically entails scanning visitors at gatehouses, patrolling the perimeters of executives' personal residences, offering 24-hour security, and assisting them on out-of-town trips (Kappeler & Potter, 2017).

It can be inferred from the results that the security actors of these mining firms were engaged in criminal warding than protecting the firm's properties, and employees and enforcing illegal mining laws against galamsey operators. This suggests that the mining security actors should exercise equal responsibility for warding criminals and firm properties, and employees, and enforce mining laws to promote the socio-economic activities of these mining sites.

Also, with regard to security coordination (joint task force), the study revealed that the majority admitted to irregular team-up work in terms of the patrol of the mining territories and warding off territorial rivals. Though, a good number of the security actors mentioned there is regular teamwork among both state and non-state security actors in the mining sectors. This suggests that there is a low correlation between both state and non-state security actors in combating crime activities at the various mining sites. This study disregards the previous study by Loyens and Vandekerckhove (2018) that the private police complement the public intellect community through personnel transfer. In this regard, the government is donating resources and capabilities that are scarce to acquire in view of the entry of private-sector intelligence and professionals. In light of the fact that both private and public policing have similar features, they share the same ethical implications. This suggests that the mining security actors were not regularly working as a team to promote security activities in the mining sites, hence, there is a need for the security actors to up their game in proper coordination to promote socio-economic activities in the mining sites.

In respect of the security challenges faced by mining companies in terms of security infrastructure and equipment, the majority of the security actors admitted that there is inadequate closed-circuit television (CCTV) at the various mining sites. Even though, a good number of the respondents also disclosed that there is inadequate electronic fencing. Another considerable number also mentioned poor security gates and doors, and the least indicated poor Global Positioning System (GPS). The result is an indication that not all mining firms have installed security infrastructure to the fullest. Thus, where there might be CCTV, there might not be any form of electronic fencing, adequate security gates, and doors, as well as GPS. Private Security Companies (PSCs) assist in reducing the security gap in the face of police inabilities by performing duties that would either not have been conducted by the police, such as providing CCTV operations, or, if the police did perform such tasks, such as protecting national infrastructure like airports, would have further stretched to the limit their already limited capacity.

In regard to human security challenges, the majority of the security actors mentioned theft by employees as the greatest challenge. Follow-up was armed robbery by the galamsey miners. Another risk was attacked by community

members and clashes with foreign illegal miners. The result suggests that these mining firms were faced with major challenges especially when the community feels insecure or cheated by the mining firms, hence, theft and consistent raiding of concessions by community illegal miners. This study's findings agree with previous research by [Ezeilo, Nwoke, and Anya \(2018\)](#) that the causes of the mining industry violent encounter fourfold. For starters, they take place between armed illegal miners and a military task group combating illegal mining. Second, there are conflicts with Chinese miners, who employ armed forces to protect their access to minerals ([Antwi-Boateng & Akudugu, 2020](#)) and face community upheavals. Mistreatment of Ghanaian workers, cultural differences, land disputes, and negative environmental repercussions all contribute to such uprisings ([Hilson et al., 2019](#)). Third, violent fights occur between local residents and LSM company security guards over land access or unhappiness with a lack of work ([Twerefou et al., 2015](#)). The fourth source of conflict is transitory or migratory mining, which draws armed robbers that endanger both miners and adjacent populations ([Nyame & Grant, 2014](#)). Perhaps it is required of the mining security actors to beef up their security operations and infrastructure to combat these challenges.

Finally, the study disclosed the challenge of effective and ineffective state and non-state security actors. The study admitted that security operations had been effective despite constant theft by employees, even though few of the respondents mentioned little effectiveness and not effective at all. It can be assumed from the results that the presents of security actors at the mining firms were effective, however, these mining firms suffered from various kinds of security challenges.

10. Conclusion

The study concludes that the non-state security actors were predominantly found in these mining firms because they are located in the local communities. Hence, they act as a relief to the state security on routine duties by giving them space to focus on core policing tasks such as intelligence gathering and investigations. It was concluded that the mentioned mining operations were submerged with varied categories of state security actors including the Ghana Armed Forces, Ghana Police Service, and the National Investigative Bureau. These state security actors were represented at the mining sites to promote peace and socio-economic development. Also, the study concluded that the security actors of these mining firms were engaged in criminal warding than protecting the firm's properties, and employees and enforcing illegal mining laws against galamsey operators. The study further concluded that the respective mining firms have demonstrated their own capacity in providing their own security apart from the state security actors which could go a long way to promote their socio-economic development. It was also concluded that the security actors of these mining firms were engaged in criminal warding than protecting the firm's properties, and em-

ployees and enforcing illegal mining laws against gamamsey operators. It was further concluded that the mining security actors were not regularly working as a team to promote security activities in the mining sites, hence, there is a need for the security actors to up their game in proper coordination to promote socio-economic activities in the mining sites. Evidence gathered concluded that not all mining firms have installed security infrastructure to the fullest. Thus, where there might be CCTV, there might not be any form of electronic fencing, adequate security gates, and doors, as well as GPS. The study concluded that the respective mining firms were faced with major challenges especially when the community feels insecure or cheated by the mining firms, hence, theft and consistent raiding of concessions by community illegal miners. It was finally concluded that the security operations have been effective despite constant theft by employees, even though few of the respondents mentioned little effectiveness and not effective at all. However, these mining firms suffered from various kinds of security challenges.

11. Recommendations

The study recommends that the mining sectors should invest in well-resourced security infrastructure development to enable the security actors to exercise equal responsibility for warding criminals, firm properties, and employees, and enforce mining laws to promote the socio-economic activities of these mining sites. The study also recommends that the varied categories of mining security actors should work together as a team on regular basis to enable them to maximize their security architecture at the various mining sites to promote the socio-economic activities of the mining areas. It is also recommended that all the respective mining firms should constantly enhance their security apparatus such as CCTV cameras, and electronic fencing, and provide adequate security gates, and doors with GPS systems, among others to combat consistent raiding of the mining sites.

12. Organization of Study

The article is organized as follows: the first paragraph describes the background of the study, followed by the statement of the problem, objectives of the study, literature review, research methodology, data analysis, discussions of results, conclusions, and recommendations.

Authors Contributions

The first author, Dr. Daniel Ofori conceived and drafted the opening, Ambrose-Amoah-Ashyiah and Benjamin Adjei Danquah reviewed the study methodology, Michael Oppong analyzed the quantitative data gathered from the field, and Kakraba Ben Komla proofread the study and organized the study references.

Conflicts of Interest

The authors declared no conflict of interest regarding the publication of this paper.

References

- Alao, A. (2012). *Mugabe and the Politics of Security in Zimbabwe*. McGill-Queen's University Press.
- Alhassan, I. A. (2014). Galamsey and the Making of a Deep State in Ghana: Implications for National Security and Development. *Research on Humanities and Social Sciences*, 4, 47-56.
- Amponsah-Tawiah, K., & Dartey-Baah, K. (2011). The Mining Industry in Ghana: A Blessing or a Curse. *International Journal of Business and Social Science*, 2, 62-69.
- Aning, E. K. (2016). An Overview of the Ghana Police Service. *Journal of Security Sector Management*, 4, 1-37.
- Antabe, R., Kansanga, M., Sano, Y., Kyeremeh, E., & Galaa, Y. (2020). Utilization of Breast Cancer Screening in Kenya: What Are the Determinants? *BMC Health Services Research*, 20, Article No. 228. <https://doi.org/10.1186/s12913-020-5073-2>
- Antwi-Boateng, O., & Akudugu, M. A. (2020). Golden Migrants: The Rise and Impact of Illegal Chinese Small-Scale Mining in Ghana. *Politics & Policy*, 48, 135-167. <https://doi.org/10.1111/polp.12342>
- Atuguba, R. A. (2017). The Ghana Police Service: A Practical Agenda for Reform. *IEA Policy Analysis*, 3, 1-15.
- Baah-Ennumh, T. Y., & Forson, J. A. (2017). The Impact of Artisanal Small-Scale Mining on Sustainable Livelihoods: A Case Study of Mining Communities in the Tarkwa-Nsuaem Municipality of Ghana. *World Journal of Entrepreneurship, Management and Sustainable Development*, 13, 204-222. <https://doi.org/10.1108/WJEMSD-09-2016-0042>
- Baker, B., & Scheye, E. (2007). Multi-Layered Justice and Security Delivery in Post-Conflict and Fragile States: Analysis. *Conflict, Security & Development*, 7, 503-528. <https://doi.org/10.1080/14678800701692944>
- Bourne, M. (2012). Security Sector Reform and the Challenges and Opportunities of the Privatisation of Security. In D. Lilly, & M. von Tangen Page (Eds.), *Security Sector Reform: The Challenges and Opportunities of the Privatisation of Security* (pp. 1-20). International Alert.
- Bryden, A. (2010). *Security Sector Transformation in Africa*. LIT Verlag Münster.
- Cochran, W. G. (1963). *Sampling Techniques*. 2nd Edition. John Wiley and Sons, Inc.
- Doerfling, P., Kopec, J. A., Liang, M. H., & Esdaile, J. M. (2010). The Effect of Cash Lottery on Response Rates to an Online Health Survey among Members of the Canadian Association of Retired Persons: A Randomized Experiment. *Canadian Journal of Public Health*, 101, 251-254. <https://doi.org/10.1007/BF03404384>
- Doroudgar, S., Mae Chuang, H., Bohnert, K., Canedo, J., Burrowes, S., & Perry, P. J. (2018). Effects of Chronic Marijuana Use on Driving Performance. *Traffic Injury Prevention*, 19, 680-686. <https://doi.org/10.1080/15389588.2018.1501800>
- Dzivenu, S. (2018). The Politics of Inclusion and Exclusion of Traditional Authorities in Africa: Chiefs and Justice Administration in Botswana and Ghana. *Political Perspectives*, 2, 1-30.
- Ezeilo, J. N., Nwoke, U., & Anya, S. N. (2018). The (Un)Constitutional Appropriation and

- Expenditure of Public Funds in Nigeria: Analysing the “Security Vote” Paradigm through the Law. *Journal of African Law*, 62, 225-253.
<https://doi.org/10.1017/S0021855318000141>
- Ferring, D., Hausermann, H., & Effah, E. (2016). Site Specific: Heterogeneity of Small-Scale Gold Mining in Ghana. *The Extractive Industries and Society*, 3, 171-184.
<https://doi.org/10.1016/j.exis.2015.11.014>
- Gumedze, S. (2017). To Embrace or Not to Embrace: Addressing the Private Security Industry Phenomenon in Africa. In *Private Security in Africa: Manifestation, Challenges and Regulation* (pp. 3-14). Institute for Security Studies.
- Hausermann, H., Ferring, D., Atosona, B., Mentz, G., Amankwah, R., Chang, A. et al. (2018). Land-Grabbing, Land-Use Transformation and Social Differentiation: Deconstructing “Small-Scale” in Ghana’s Recent Gold Rush. *World Development*, 108, 103-114.
<https://doi.org/10.1016/j.worlddev.2018.03.014>
- Hilson, A., Hilson, G., & Dauda, S. (2019). Corporate Social Responsibility at African Mines: Linking the Past to the Present. *Journal of Environmental Management*, 241, 340-352. <https://doi.org/10.1016/j.jenvman.2019.03.121>
- Ibeanu, O., & Momoh, A. (2018). *State Responsiveness to Public Security Needs: The Politics of Security Decisionmaking, Nigeria Country Study*. King’s College.
- Idowu, O. O. (2018). The Proliferation of Private Security Companies (PSCs) in Nigeria: Challenges and Prospect. *International Journal of Peace and Conflict Studies*, 5, 126-135.
- Kappeler, V. E., & Potter, G. W. (2017). *The Mythology of Crime and Criminal Justice*. Waveland Press.
- Kemp, D., & Owen, J. R. (2019). Characterising the Interface between Large and Small-Scale Mining. *The Extractive Industries and Society*, 6, 1091-1100.
<https://doi.org/10.1016/j.exis.2019.07.002>
- Kirunda, S. (2018). *Private and Public Security in Uganda: The Private Security Sector in Africa*. Institute for Security Studies.
- Kotrlík, J. W., & Higgins, C. C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19, 43-50.
- Kwon, L., Long, K. D., Wan, Y., Yu, H., & Cunningham, B. T. (2016). Medical Diagnostics with Mobile Devices: Comparison of Intrinsic and Extrinsic Sensing. *Biotechnology Advances*, 34, 291-304. <https://doi.org/10.1016/j.biotechadv.2016.02.010>
- Loyens, K., & Vandekerckhove, W. (2018). Whistleblowing from an International Perspective: A Comparative Analysis of Institutional Arrangements. *Administrative Sciences*, 8, Article No. 30. <https://doi.org/10.3390/admsci8030030>
- Malec, M. (2013). *Security Perception: Within and beyond the Traditional Approach*. Masters Thesis, Naval Postgraduate University.
- Milner, S. G., Jost, M., Taketa, S., Mazón, E. R., Himmelbach, A., Oppermann, M. et al. (2019). Genebank Genomics Highlights the Diversity of a Global Barley Collection. *Nature Genetics*, 51, 319-326. <https://doi.org/10.1038/s41588-018-0266-x>
- Minter (2017). *Medium Term Expenditure Framework (MTEF) for 2017-2019: 2017 Budget Estimates*. Ministry of Lands and Natural Resources (MLNR).
- Musah, A. F., Fayemi, K., & Fayemi, J. K. (2000). *Mercenaries: An African Security Dilemma*. Pluto Press
- Ngulube, P. (2005). Research Procedures Used by Master of Information Studies Students at the University of Natal in the Period 1982 to 2002 with Special Reference to Their

- Sampling Echniques and Survey Response Rates: A Methodological Discourse. *International Information and Library Review*, 37, 127-143. <https://doi.org/10.1080/10572317.2005.10762673>
- Nyame, F. K., & Grant, J. A. (2014). The Political Economy of Transitory Mining in Ghana: Understanding the Trajectories, Triumphs, and Tribulations of Artisanal and Small-Scale Operators. *The Extractive Industries and Society*, 1, 75-85. <https://doi.org/10.1016/j.exis.2014.01.006>
- Olonisakin, F., Ikpe, E. & Badong, P. (2019). *The Future of Security and Justice for the Poor: A "Blue Sky" Think-Piece*. King's College.
- Owusu, E. E., & Dwomoh, G. (2012). The Impact of Illegal Mining on the Ghanaian Youth: Evidence from Kwaebibirem District in Ghana. *Research on Humanities and Social Sciences*, 2, 86-93.
- Parker, T. (2020). *Make or Break: Reputational Risks Facing Chinese Companies Operating in Africa's Extractive Industries*. Ph.D. Thesis, Stellenbosch University.
- Ros-Tonen, M. A., Aggrey, J. J., Somuah, D. P., & Derkyi, M. (2021). Human Insecurities in Gold Mining: A Systematic Review of Evidence from Ghana. *The Extractive Industries and Society*, 8, Article ID: 100951. <https://doi.org/10.1016/j.exis.2021.100951>
- Steden, R. V., & Sarre, R. (2017). The Growth of Private Security: Trends in the European Union. *Security Journal*, 20, 222-235. <https://doi.org/10.1057/palgrave.sj.8350052>
- Sule, A. (2019). *Is Crime Rate Increasing in Ghana?*
- Tankebe, J. (2018). Colonialism, Legitimacy and Policing in Ghana. *International Journal of Law, Crime and Justice*, 36, 67-84. <https://doi.org/10.1016/j.ijlci.2007.12.003>
- Tsikata, D. (2019). *Domestic Work and Domestic Workers in Ghana: An Overview of the Legal Regime and Practice*. International Labour Office.
- Twerefou, D. K., Tutu, K., Owusu-Afriyie, J., & Adjei-Mantey, K. (2015). *Attitudes of Local People to Mining Policies and Interventions*. International Growth Centre.
- Uzuegbu-Wilson, E. (2020). *Partnership between the Police and Private Security Services on Crime Prevention and Control in Nigeria: An Empirical Analysis*. Ph.D. Thesis, Babcock University Iperu Campus. <https://doi.org/10.2139/ssrn.3690755>
- Yankson, P. W., & Gough, K. V. (2019). Gold in Ghana: The Effects of Changes in Large-Scale Mining on Artisanal and Small-Scale Mining (ASM). *The Extractive Industries and Society*, 6, 120-128. <https://doi.org/10.1016/j.exis.2018.09.009>