

# International Journal of Criminal Justice

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# INTERNATIONAL JOURNAL OF CRIMINAL JUSTICE

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The primary research areas of the journal are change of human behaviors, community response, and social system in the field of criminal law, criminology, criminal justice and psychology. We welcome research contributions that achieve: (a) improving knowledge and understanding of the etiology and trends of crime (b) utilizing theoretical frameworks and research methodologies in evaluation of criminal legislations and policies in different jurisdictions and (c) undertaking analysis and research on enacting and amending the criminal codes and legislations in response to changing or evolving crime trends with an eye towards improving the effectiveness of the judicial system and criminal policies.

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# Identifying Regional Factors Associated with Crime in South Korea: Synthesis of Social Disorganization and Routine Activities Theories

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## Abstract

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As criminological theories play a significant role in providing insights to explain the crime phenomenon, some theories such as social disorganization and routine activity theories have been tested with various scopes and locations. In this study, factors related to the theories were tested to confirm any significant effect on crime rates at a regional level. By using hierarchical regression analysis, the study attempts to examine the relations among the socio-economic and environmental factors across the regions. The results indicate that the community heterogeneity (i.e., foreign population and single-person household) was a significant factor in regional crime rates, but the environmental factors had possible mediating effects, lowering the significance level. Moreover, the number of commercial places per area affected crime rates representing a higher criminal opportunity level with business areas.

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## Keywords

Crime Rates, Social Disorganization Theory, Routine Activities Theory, Theory Testing, South Korea

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## INTRODUCTION

Crime prevention aims to promote adequate interventions to reduce the motives or opportunities for a crime before they arise. One way to prevent crime is to identify the causes of crime and criminal behavior. Much evidence from criminological research shows that crime incidents are concentrated at hot spots within urban environments (Weisburd et al. 2012a, b), implying that crime events need to be understood under the spatio-temporal context. With the pattern research involving neighborhood-level crime analysis being actively carried out in Western societies, relevant research has also emerged in South Korea. Routine activity theory and social disorganization theory have been extensively used for spatial analysis of crime as they both provide macro perspectives on crime. However, empirical studies of those two theories are often carried out separately. Because of the complexity of social phenomena, it is essential to test those criminological theories in various geographical and contemporary contexts. Considering how pattern research involving neighborhood-level crime analysis is primarily done in Western societies, the current study aims to understand the factors associated with local crime in Korea by using social disorganization theory and routine activity theory in tandem by employing a hierarchical regression model. Because those two theories propose different predictors of crime, integrating both theories can be a more rigorous approach for investigating factors influencing regional crime. It is expected that this integrated theoretical framework will provide more valid empirical evidence, which in return, provides possible explanations for the mixed findings of those theory-testing research conducted in Korea.

## THEORETICAL BACKGROUND AND LITERATURE REVIEW

### **Social Disorganization Theory**

Social disorganization theory is one of the main criminological theories that explain the link between criminal activities and neighborhood ecological characteristics. The earlier formulation of social disorganization theory by Shaw and McKay (1942) suggested that structural disadvantages such as poverty, racial heterogeneity, and residential mobility were the leading causes of a neighborhood crime problem. Early

empirical studies showed strong support for the theory—they found that an increase in the poverty rate, residential mobility, and racial heterogeneity of the neighborhoods further increased the level of disorganization in the community, indicating that social disorganization is closely associated with high crime rates in the community. In the 1990s, Sampson (1997) and other social disorganization theorists reintroduced this social disorganization theory. In particular, they focused more on social control aspects by developing the concept of collective efficacy. Collective efficacy is a form of social capital that is a standardized and well-tested measure, and it is defined as “social cohesion among neighbors combined with their willingness to intervene on behalf of the common good” (Sampson, Raudenbush, & Earls, 1997, p. 918).

Although social disorganization theory is mainly derived from Western societies (i.e., the United States), it continues to be carried out in Korea to test this theory. However, more scholarly attention is needed as these theory-testing studies show mixed findings. When it comes to testing social disorganization theory, it generally involves examining how social disorganization variables and collective efficacy-related variables influence crime rates, crime victimization rates, and the fear of crime.

One of the most recent studies testing social disorganization theory in South Korea, Lee and Choi (2019), applied theoretical frameworks of social disorganization and life course theories. As crimes of violence, theft, and robbery often threaten people’s lives the most obviously, the study analyzed the effects of social structural variables (e.g., poverty, housing instability, racial heterogeneity, population density) and demographic factors (i.e., age and gender) in explaining these three crime types. This study was community-level research that calculated the average of regional social structural variables to run a panel regression, and their major findings are worth highlighting: 1) theft was more likely to occur when the poverty rate and foreigner ratio were lower, which led to all social structural factors (except residential instability to be meaningful predictor); 2) violent crime showed a statistically significant correlation with the foreigner ratio; 3) the higher the population density and residential mobility, the higher the frequency of robbery—suggesting that the socio-structural factors can have a different impact depending on the nature of the crime.

Similarly, Cheong and Kang (2013) conducted a negative binomial regression analysis on homicide for all administrative divisions of Seoul to validate the effect of social structural characteristics on crime based on ecological crime theory. To measure the level of economic disadvantage in the Seoul administrative divisions, their research model included social structural factors such as the ratio of basic livelihood security

recipients, residential mobility, racial heterogeneity, household dissolution index (which was created based on the number of people per household), population density, and commercial land use ratios. Then, they investigated the degree of influence on the number of homicides between 2007 and 2009 in each administrative division in Seoul, as it was their outcome variable. The study findings indicated that the higher the proportion of basic livelihood security recipients in the neighborhood (division), the smaller the number of people per household, and the higher the commercial land use rate, the higher the murder crime rate was. Other variables had no effect.

Research models used in those studies mentioned above involved three central theoretical elements from the classical social disorganization theory (i.e., socio-economic status, residential mobility, and racial heterogeneity) to identify a one-dimensional causal link with a crime. However, unlike those research models constructed from the classical social disorganization theory, Sampson and Groves (1989) brought newer perspectives into measuring social disorganization. The research model used in modern analyses of social disorganization theory allows for testing the theory more directly and effectively by using social control factors as a mediator in predicting how social structural characteristics influence crime.

The concept of social control in social disorganization theory has been conceptualized and operationalized as collective efficacy (Sampson et al., 1999), which was also adopted and tested in Korean research studies. In a study examining the effect of collective efficacy on crime victimization in the Daegu area, social structural factors and collective efficacy of the neighborhoods showed a relatively positive relationship with Daegu's economic power, residential instability, and the ratio of Koreans (versus non-Koreans). However, the study found no significant association between collective efficacy and crime victimization (Yoon, 2012). In Lee and Lee's (2012) study, social structural factors were included in the research model to identify the factors that change in violent crime trajectories, and they examined informal social control factors (e.g., the presence of elderly neighbors, the number of police officers) to measure collective efficacy. They found a negative correlation, suggesting that collective efficacy could explain the crime phenomena. Supplemental to the central elements of social disorganization theory, Choi and Park (2018) included socio-physical environmental factors in the model to analyze crime phenomena, demonstrating how social disorganization theory is utilized in various ways for crime analysis.

## Routine Activity Theory (RAT)

The basic elements of crime in the routine activity theory are a motivated offender, a suitable target, and the absence of appropriate guardianship (Felson & Cohen, 1979). It is hypothesized that crime will occur when these three elements converge in time and space. Since the routine activity theory was first formulated by Cohen and Felson (1979), research using this theory has been carried out in various criminological research fields, including victimization (e.g., gender, sexual assault, adolescents-related events), cybercrime, and opportunistic crime perpetration (e.g., burglary, theft). In particular, the relationship among crime, the absence of capable guardianship, and various spatial characteristics have been used in conjunction with those studies focusing on temporal and spatial factors to explain neighborhood crime. For the routine activity and life-course theories, recent research studies have tended to subdivide the constituent factors into attractiveness, proximity, exposure, and level of protection (Miethe & Meier, 1990, 1994; Popp, 2012; Reynald & Elffers, 2015; Vakhitova et al., 2016). For instance, Miethe and Meier (1990) came up with the idea of lifestyle-routine activity theory, which emphasized the fact that the selection of a victim within its socio-spatial context is dependant on the “expected utility of one target over another” (p. 245). They identified four key factors as *attractiveness* to a motivated offender (e.g., physical visibility and accessibility), *proximity* to offenders (e.g., the physical distance between where potential targets reside and potential offenders are found), *exposure to risk* (e.g., physical visibility and accessibility), and *level of protection* (e.g., availability of personal, social, and physical dimensions). Traditionally, researchers measured “target attractiveness” through economic indicators such as unemployment, social class, possession of expensive goods (Miethe & Meier, 1990; Sampson & Wooldredge, 1987). “Proximity to offenders” and “exposure to risk” were often measured by considering non-household activities such as the number of evenings per week spent outside the home and the number of hours per week the home was vacant (Messner & Blau, 1987; Miethe & Meier, 1990). Lastly, the concept of “level of protection” and “capable guardianship” were often measured using the number of household members, the density of social networks in the neighborhood, use of safety devices such as door locks or burglar alarms (Miethe & Meier, 1994; Reynald & Elffers, 2015). Furthermore, a large body of scholarship attempts to apply this lifestyle-routine activity theory to explain various cybercrimes such as hacking, phishing, and media fraud. When Rutger and Yar (2016) used a large sample (N = 9,161) to measure the effects of value, visibility,

accessibility, and guardianship on the victimization of six cybercrimes, they found that visibility plays the most significant role in explaining cybercrime victimization, while capable guardianship had no significant impact on victimization.

Most of the studies in Korea that draw on routine activity theory look at how adolescents' lifestyle or routine activities are related to delinquency, crime perpetration, and crime victimization (Jo & Lee, 2013; Kim, 2008; Lee, 2017; Lim, Choi, & Yoo, 2015; Park & Jo, 2017). According to studies examining the effects of differences in adolescents' routine activities on deviance, male students attending vocational schools were more likely to commit juvenile delinquency. When examining the impact of routine activities on juvenile delinquency, activities involving computer games, entertainment/nightlife, nighttime loitering, and sports activities had a positive effect. However, shopping, cultural activities, and housework/communication with family members were negatively correlated. When demographic characteristics and all routine activities were controlled, male adolescents, nighttime activities/nightlife, and nighttime loitering significantly impacted juvenile delinquency (Kim, 2008).

Furthermore, studies examining gender differences in the types of juvenile delinquency and crime victimization (Lee, 2017; Lim, Choi, & Yoo, 2015) found that gender is significant. It demonstrated that gender affected the seriousness of delinquency and type of crime—the prevalence of crime victimization was about 1.63 times higher in male students than in female students. Both male and female juveniles had a high explanatory power for the variables of routine activity theory. Reckless behavior and a risky lifestyle had the most significant influence on male students' crime victimization, but the absence of capable guardianship had no effect. The absence of capable guardianship and participation in extra-curricular activities were meaningful in predicting female students' victimization, resulting from high target suitability due to relational thinking and physical vulnerability (Lim, Choi, & Yoo, 2015).

As a study of routine activity theory, Yun (2018) analyzed survey data from 923 adult men and women over 18 to investigate the relationship between deviant lifestyles and crime victimization. Those populations were drawn from 44 areas in Daegu. Independent variables were drunk driving, assault, robbery, and property damage, while the dependent variables of deviant lifestyles mainly included jaywalking, smoking in non-smoking areas, parking violations, and signal violations. As a result of the analysis, the effect of a deviant lifestyle on experiencing crime victimization is mediated through criminal behavior, and the fact that the behavior of taking part in a crime has the most significant effect on having experienced crime victimization. This suggests that there is

an overlap between crime perpetrators and victims. In a study done by Kim and Kwak (2016), an empirical analysis was performed on the relationship between an individual lifestyle and crime victimization using the 2012 crime victimization survey data. The study results showed a positive relationship between returning home late (after 10 pm) and property victimization, mainly due to lack of guardianship. Concerning assault, people returning home under the influence of alcohol and wearing expensive goods increased their attractiveness as victims, increasing their crime victimization. For sex crimes, none of the independent variables in the model turned out to be significant.

### **Social Disorganization and Routine Activity Theories**

Several past research studies attempted to integrate routine activity and social disorganization theories (Miethe & McDowall 1993; Miethe & Meier 1990; Smith et al., 2000; Weisburd et al., 2012a, b; Wilcox et al., 2003). Although Miethe and McDowall (1993) first used a survey of Seattle residents and characteristics of city blocks to explore the feasibility of integrating these two theories, they found that the context of social disorganization did not affect opportunities for crime. However, when their data was reexamined by Rountree et al. (1994) to determine if neighborhood context impacted individual victimization, they found that neighborhood-level density, degree of disorder, and racial heterogeneity significantly predicted property and violent crime. Identifying how neighborhood context moderates the relationship between individual opportunity and victimization allowed the authors to support the potential for integrating both theories.

Wilcox et al. (2003) attempted to expand on Rountree et al.'s (1994) study and proposed interaction effects between neighborhood context and place-based opportunity variables. Smith et al. (2000) then focused on exploring routine activities and social disorganization in a combination based on geographic units and found significant interaction effects between social disorganization and routine activities at the face block level. Another study supported integrated social and routine activity theories using geographic units rather than individuals. For instance, Rice and Smith (2002) used street segment as their main unit of analysis and found that interaction effects between variables from both theories explained more of the variance in predicting the rates of motor vehicle theft.

Most importantly, several empirical studies that used routine activity and social disorganization theories in Korea should be highlighted. Kim (2010) used 2009 crime

victimization survey data to identify situational factors associated with victims of crime by applying life course theory, routine activity theory, and social disorganization theory. At the individual level, he intended to demonstrate the relationship, attractiveness, exposure, protection/capable guardianship between sociodemographic characteristics and personal crime victimization. He then examined the direct association between social disorganization and individual crime victimization at the neighborhood level. Using hierarchical linear modeling (HLM), Kim (2010) further assessed the impact of neighborhood-level factors in predicting individual-level factors. In some cases, however, the independent variables showed conflicting results for each variable in explaining the level of crime victimization.

Kim, Park, and Park (2010) used Korean census and crime victimization survey data to comprehensively understand what factors predict crime victimization. They assessed correlation and statistical interaction effects between factors of structural choice theory and crime victimization. These effects were tested, and the effect of social disorganization variables on crime victimization at the neighborhood level was confirmed. In addition, applying a hierarchical linear model proved that the influence of individual-level variables appeared differently depending on neighborhood-level variables. As a result of the study, individual-level variables that affected property damage were age, income level, cash holdings, and a late homecoming. Social level variables that affected property damage were housing instability, proximity, and official control. Individual-level variables of age and late homecoming and a social-level variable of proximity significantly impacted on violent victimization. All individual-level variables also interacted with social-level variables.

Park (2011, 2012) measured central elements of social disorganization theory through the level of social disorganization, neighborhood order, neighborhood informal social control while measuring three elements of routine activity theory by attractiveness, exposure to crime victimization, and protection ability. Park (2011, 2012) then analyzed the relationship between each factor and the crime victimization. According to the research results, individual crime victimization was mainly explained by demographic characteristics (gender and age) and crime opportunity factors (attraction, exposure, and protection ability) rather than neighborhood characteristics.

It is also essential to consider neighborhood characteristics to understand household crime victimization, especially because it has been suggested that there is a strong correlation between residential type, socio-economic level, and proximity in urban areas. For instance, Park (2011) found single-family housing areas with low

residential mobility, a low socio-economic level, and high proximity had a higher rate of household crime victimization, whereas apartment areas with high residential mobility, a high socio-economic level, and low proximity showed relatively low victimization. The need to reinterpret traditional social disorganization theory in the socio-cultural context of Korea was thus emphasized. However, Park (2012) study found that although neighborhood factors cannot influence household crime victimization directly, there was a relationship with the area's housing type characteristics, such as the apartment occupancy rate. It was found that there is a positive correlation among high socio-economic levels, high housing instability, and apartment occupancy rates, which is expected to result from the change in the analysis target and the difference in the timing of the data analysis.

Lee (2016) pinpointed the methodological limitations of previous research studies, where individual-level and neighborhood-level factors were looked at independently in explaining elderly fraud victimization. A contextual analysis was then conducted to comprehensively test the interaction effect of individual-level variables with neighborhood-level variables. At the individual level, the study findings indicated that leisure time, pocket money, cognitive vulnerability, possession of expensive goods, and crime prevention education significantly affected the victimization. The study also found that higher use of leisure time leads to a lower victimization rate, which contradicts the existing routine activities theory. When the interaction effects with socio-structural variables were observed, the study found that females with lower education levels were more likely to be victimized. However, the level of impact changed when their residence period, social trust, community disorder, financial independence, basic livelihood security recipients' ratio in the community, and welfare budget ratio interacted with community variables. The higher the social trust, the higher the disorder, the higher the financial independence, the higher the level of pocket money, the more expensive things possessed, and the older the age, the more likely it was that an individual would be victimized.

## **Current Study**

The current study aims to employ a multi-level theoretical model of crime concentration by integrating routine activity and social disorganization into a single hierarchical model. This theoretical model can provide a better framework for understanding the relationships between neighborhood context and micro-spatial

environmental conditions in South Korea. In Korea, each theory has been applied in various ways to analyze the crime phenomenon, and using public data to develop a broader scale contributes to a better understanding of the crime phenomenon. In this study, while utilizing the elements of these pioneering studies, hierarchical regression analysis is applied to present a comprehensive theoretical model and explain the crime. Applying elements of social disorganization theory – poverty, residential instability, ethnic heterogeneity as well as collective efficacy – and, routine activities theory – likely offender, a suitable target, absence of a capable guardian – the current study intended to understand the widespread phenomenon in the nation. Therefore, three main hypotheses of the current study are 1) social disorganization factors have a relation with the regional crime rate, 2) routine activities factors have a relation with the regional crime rate, and 3) synthesized factors from the integration of the two theories can explain regional crime better than each theory alone.

## METHODS AND DATA MEASURES

This study focuses on comprehensively verifying the social disorganization and routine activity theories by utilizing constructing indicators referred in existing studies (Cheong & Kang, 2013; Choi & Park, 2018; Felson & Cohen, 1979; Jo & Lee, 2013; Lim, Choi, & Yoo, 2015; Kim, 2008; Kim & Kwak, 2016; Lee, 2017; Lee & Choi, 2019; Lee, Kim, & Ryu, 2018; Lee & Lee, 2012; Park et al., 2019; Park & Jo, 2017; Sampson & Groves, 1989; Sampson et al., 1999; Yun, 2018). In addition, the level of analysis was set to the unit of a metropolitan city or higher, where all relevant survey and publically open data were available. As dependent variables, the analysis was performed on the index of five items frequently treated when analyzing crime: theft, robbery, homicide, sexual violence, and assault<sup>1</sup>. All the data, including crime data, was collected from the most recent public data (2014-2018). The analysis was conducted under the consideration of data limitations.

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<sup>1</sup> 2018 data from Statistics Korea

## **Regional Factors of Social Disorganization Theory**

Various social disorganization theories have been used as indicators of ethnic heterogeneity, residential instability, and level of economic disadvantage in local communities (Sampson & Groves, 1989; Sampson et al., 1999). However, when applied in Korea, the utility of the indicator on racial diversity is so low that this variable is often excluded in many cases (Cheong & Kang, 2013; Choi & Park, 2018; Lee & Choi, 2019; Lee & Lee, 2012; Lee, Kim, & Ryu, 2018). The analysis of the current study's population heterogeneity includes a foreigner rate and a socio-economic status such as gender, age, and a single-person household. Previous studies often used gender and age variables for control variables. However, the current study included those variables as independent variables to predict the regional crime rates because the measure has already been used in some prior research as independent variables (Jung, 2014; Sampson & Laub 2005; Schwartz et al., 2009), providing valid evidence that age may be related to criminal behaviors. For the resident instability index, annual data living in the relevant area were collected from the census data, then the ratio by a period of residence was calculated, and the ratio of residents living in the area for less than three years was standardized. As an indicator of the level of economic disadvantage, the ratio of the next-lowest class by region was used.

## **Regional Factors of Routine Activities Theory**

In one study done in Miami-Dade County, Florida, the three elements of the routine activities theory – motivated offender, suitable target, and lack of guardianship – were synthesized and indexed by the factors used in the previous studies (Louderback & Sen Roy, 2018). This current study further reconstructed these indices reflecting on the social context of Korea. First, the indicators of motivated offenders are composed of the age and gender groups that commit the most crimes found in various surveys and studies (Felson & Cohen, 1979; Sampson & Laub 2005; Schwartz et al., 2009). In the United States, most of the young people aged 15-24 make up the most significant proportion of criminals (Sampson & Laub 2005; Schwartz et al., 2009), but in Korea, some studies showed that middle-aged people aged 40 to 50 have the highest crime rate (Jung, 2014). Accordingly, the motivated offender indicators were established by standardizing the proportion of age groups. The unemployment rates were unable to be collected based on regions. Second, the number of commercial facilities per area is calculated and standardized for the suitable target index. In addition, the number of subway stations per area was indexed. References

were made to studies using these items based on the theoretical background that many commercial facilities and subway stations have many visitors and passers-by, which increases the chance of a potential criminal committing a crime (Merton, 1938; Louderback & Sen Roy, 2018). Lastly, the number of parks and playgrounds, which are public places where CCTVs are generally installed, were summed up and standardized to be used as an index for capable guardianship. Also, security measures such as security zone<sup>2</sup>, facilities<sup>3</sup>, and policies<sup>4</sup> in the area were counted.

### **Analysis Method**

Analytic techniques of the current study include basic descriptive statistics, correlations among the variables, and hierarchical regression model analysis. Since the final analysis is to understand crime within the theoretical framework, socio-economic status factors related to social disorganization theory were analyzed (Model1), and environmental factors related to routine activities theory were included for the final analysis (Model2).

Before analyzing the hierarchical regression analysis, basic descriptive statistics for the variables were examined. The crime rate was calculated based on Statistics Korea; five major crimes (i.e., theft, robbery, homicide, sexual violence, and assault) were summarized and calculated per 100,000 populations. The mean crime rate among the areas was 886.61, and the standard deviation was 517.425. However, the distribution of crime rates across the regions was left-skewed because most of the crime rates were lower than the mean of crime rates. Thus, by logging the crime rate, the distribution of crime rates was adjusted close to a normal distribution ( $M=6.69$ ,  $S.D.=0.412$ ), which was used as a dependent variable.

The independent variables were grouped into two based on the relation to the theories. Firstly, the variables related to social disorganizations and socio-economic status in regions were analyzed. The population per square kilometer was calculated to understand the density of the population of the areas. The mean population per area was 10,111.77, and the standard deviation was 7,006.291. The mean female population rate was 0.50, which meant 50% of the population was female among the regions. The range of rates across the regions was from 0.43 to 0.53. Age distribution was categorized into teens and under, the 20s-30s, 40s-50s, and 60s and over. The smallest rate population

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<sup>2</sup> Sum number of public CCTV, safety emergency bells, and women's safety house, 2018

<sup>3</sup> Number of police stations, 2018

<sup>4</sup> Number of CPTED(Crime Prevention Through Environmental Design) policies per area

was teens and under (M=.16, S.D.=.032), followed by 60s and over (M=.22, S.D.=.052), 20s-30s (M=.29, S.D.=.035) and 40s-50s (M=.32, S.D.=.035). The residential mobility could be presented with residential instability (i.e., living less than three years) and residential stability (i.e., living over ten years). Assuming a strong relationship between residential stability and instability, both variables were calculated to confirm the assumption before the final analysis. The mean population rate living in the same household less than three years was about 0.38, whereas more than ten years was about 0.30. Moreover, the single-person household mean rate was 0.30 (S.D.=0.055), and the mean rate of the foreign population was 0.03 (S.D.=0.025). Lastly, the low-income population rate was 0.07, and the standard deviation was 0.027.

The second group of variables was related to routine activities theory. The commercial places such as restaurants, convenience stores, and cafes were collected based on the official business data per square kilometer. The mean of commercial places was 0.86, and the standard deviation was 1.25. The number of subway stations per kilometer was from 0 to 2.41, mean number of subway stations was 0.4. Also, the number of public parks was counted and calculated per square kilometer, resulting in the mean being 1.85 and the standard deviation being 1.25. The mean number of playgrounds per square kilometer was 6.3; the minimum mean was 0.08, while the maximum number of playgrounds was 18.89. The numbers of businesses, subway stations, and public facilities differed depending on the region. Moreover, the rate of security zone index varied across the regions from 0 to 86.92 per square kilometer (M=0.77, S.D.=1.49). Lastly, the mean number of security-related policies was 0.74, the maximum number of policies was 4.

Table 1. Descriptive on crime rates and influencing factors by region (N=74)

Variables		Mean	S.D.	Min.	Max.	
Crime rate (raw data)		886.61	517.425	429.21	3434.98	
Crime rate (logged)		6.69	.412	6.06	8.14	
Socio-Economic Status related to Social Disorganization Theory	Population per km <sup>2</sup>	10,111.77	7,006.291	111.10	4,306.04	
	Female	.50	.015	.43	.53	
	Age	Teens and under	.16	.032	.10	.24
		20s-30s	.29	.035	.16	.40
		40s-50s	.32	.019	.28	.37
		60s and over	.22	.052	.12	.41

Variables		Mean	S.D.	Min.	Max.	
	Living years	Under 3yrs	.38	.060	.20	.52
		Over 10yrs	.30	.070	.15	.56
	Single-person household	.30	.055	.19	.46	
	Foreigner	.03	.025	.01	.12	
	Low income	.07	.027	.02	.16	
Environmental Characteristics related to Routine Activities Theory	Commercial	0.86	1.66	0.00	11.90	
	Subway	0.40	0.42	0.00	2.41	
	Public restroom	3.05	5.10	0.00	34.30	
	Park	1.85	1.25	0.00	5.83	
	Playground	6.3	4.52	0.08	18.89	
	Security zone	17.12	19.67	.00	86.92	
	Security facility	.77	1.49	.00	11.87	
	Security policy	.74	.89	.00	4.0	

The following analysis was to understand relations among the variables of the current study. Since the logged crime rate was the dependent variable of the study, correlation analysis between logged crime rate and the other variables was conducted. The significant results were with rate of female population(+), age teens and under(-), age 20s-30s(+), age 40s-50s(-), single-person household(+), foreign population(+), commercial places(+), public park(-), playground(-), and security facilities(+). Among the age variables, the age 'teens and under' group and the '20s-30s' group were considered to represent the age group since there was no significant relationship between them. Moreover, the relationship between residential instability and stability indicated strong negative relationships. Thus, the analysis only included residential instability.

Table 2. Correlation analysis between regional crime rate and influencing factor variables<sup>5</sup>

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21																
1	1																																				
2	.947**	1																																			
3	.208	.146	1																																		
4	.254*	.195	.508**	1																																	
5	-.480**	-.444**	-.420**	-.221	1																																
6	.262*	.187	.379**	.122	.028	1																															
7	-.307**	-.291*	-.108	-.118	.390**	-.310**	1																														
8	.225	.249*	.037	.094	-.766**	-.579**	-.394*	1																													
9	.085	.028	.219	-.009	.272*	.717**	-.139	-.598**	1																												
10	.018	.062	-.217	-.082	-.460**	-.680**	-.144	.791**	-.877**	1																											
11	.581**	.544**	.106	.064	-.693**	.271*	-.661**	.475*	.067	.180	1																										
12	.412**	.373*	.261*	-.098	-.247*	.508**	-.151	-.140	.271*	-.206	.229*	1																									
13	.145	.161	-.202	.119	-.387**	-.556**	-.156	.668**	-.664**	.697**	.259*	-.289*	1																								
14	.371**	.378**	.753**	.347**	-.415**	.329**	-.053	.047	.201	-.225	.151	.311**	-.129	1																							
15	.191	.143	.427**	.461**	.001	.389**	.005	-.266*	.405**	-.444**	-.069	.190	-.322**	.383**	1																						
16	-.176	-.116	-.108	.042	.211	-.175	.145	-.063	-.213	.095	-.111	-.244*	.109	-.119	.103	1																					
17	-.303**	-.317**	-.100	-.040	.676**	.203	.408**	-.695**	.380**	-.557**	-.457**	-.125	-.383**	-.104	.311**	.232*	1																				
18	-.319**	-.325**	-.041	.017	.634**	.164	.474**	-.669**	.249*	-.467**	-.510**	-.068	-.303**	-.059	.301**	.245*	.716**	1																			
19	.175	.152	-.193	-.152	.024	-.015	-.036	.009	.067	.038	-.007	.156	.018	-.169	-.081	-.036	-.054	-.142	1																		
20	.433**	.529**	-.045	.032	-.206	.066	-.284*	.185	-.032	.095	.210	.341**	.074	.356**	.167	-.121	-.207	-.230*	.038	1																	
21	.005	-.077	.333**	.251*	-.147	.102	-.015	.025	.021	.016	-.009	.125	.025	.112	.174	.019	-.046	-.031	-.044	-.130	1																

<sup>5</sup> Variables: 1. Logged crime rate, 2. Crime rate (raw), 3. Population per km<sup>2</sup>, 4. Female, 5. Age teens and under, 6. Age 20s-30s, 7. Age 40s-50s, 8. Age 60s and over, 9. Living less than 3 years, 10. Living more than 10 years, 11. Single-person household, 12. Foreign population, 13. Low income population, 14. Commercial places, 15. Subway station, 16. Public restroom, 17. Public park, 18. Playground, 19. Security zone, 20. Security facilities, 21. Security policy

## RESULTS

For a comprehensive understanding of local crime rates, a hierarchical regression model was applied with first social disorganization factors (Model1) and later inclusion of routine activities factors (Model2).

The first model included socio-economic status variables related to social disorganization theory only. Based on the results, the model was significant at level of .000 and the adjusted R square was .437, which can be interpreted as having 43.7% explanatory power. Unlike the correlation analysis, most of the variables lost their significance which can be explained when the collective effect of variables applied, variables such as age distribution was not a significant factor to the local crime rate. However, the rate of the female population ( $\beta=0.294$ ,  $p<.001$ ), single-person household ( $\beta=0.465$ ,  $p<.001$ ), and rate of foreign population ( $\beta=0.399$ ,  $p<.001$ ) were significant factors that positively influenced local crime rate. This result indicates that metropolitan areas with a higher female, single-person households, and foreign populations present higher crime rates than other areas.

However, the results changed when the environmental characteristics related to routine activities theory were included in the first model (Model2). The second model was also significant at a level of .000, the R square change from Model 1 was .197, and the adjusted R square was 0.610. The Model2 analysis presents the lower significance levels of variables in Model1(i.e., female, single-person household, and foreigner), which environmental factors such as security level can affect those factors on crime rates. Also, Model2 indicates a higher significant level with the number of commercial places ( $\beta=0.410$ ,  $p<.001$ ) which the other routine activities factors did not present significance.

The result concludes that residential stability and poverty were not the factors that can explain local crime rates, but other characteristics such as gender ratio, single-person household rate, and foreign population were significant factors. Moreover, these factors' effects were interfered by environmental factors related to routine activities theory, while the number of commercial places per square kilometer was a significant factor in local crime rates.

Table 3. Hierarchical Regression Model Analysis of Factors Influencing Crime Rate(N=74)

Variables		Model1			Model2			
		B	SE.B	β	B	SE.B	β	
(Constant)		1.506	1.511		2.328*	1.386		
Socio-Economic Status related to Social Disorganization Theory	Population per km <sup>2</sup>	0.001	0.000	-0.063	0.001	0.000	0.545*	
	Female	7.826	2.940	0.294**	6.154	2.748	0.231*	
	Age	Teens and under	-0.055	2.610	-0.004	0.134	2.331	0.010
		20s-30s	-1.053	1.982	-0.091	0.423	1.711	0.036
	Living under 3yrs	0.680	1.042	0.099	0.044	0.902	0.006	
	Single-person household	3.461	1.297	0.465**	2.764	1.176	0.371*	
	Foreigner	6.533	1.888	0.399**	4.352	1.800	0.266*	
	Low income	1.602	2.126	0.107	1.167	1.889	0.078	
Environmental Characteristics related to Routine Activities Theory	Commercial				0.101	0.029	0.410*	
	Subway				0.261	0.177	0.264	
	Public restroom				0.002	0.008	0.028	
	Park				0.063	0.045	0.191	
	Playground				0.007	0.012	0.073	
	Security zone				0.003	0.002	0.155	
	Security facility				-0.030	0.035	-0.108	
	Security policy				0.002	0.038	0.005	
Summary of Models	<i>R</i> <sup>2</sup>	.499			.696			
	<i>Adjusted R</i> <sup>2</sup>	.437			.610			
	<i>R</i> <sup>2</sup> change	.499			.197			
	<i>F</i>	8.088			8.134			
	<i>p</i>	.000			.000			

\*p<.05, \*\*p<.001

## DISCUSSION AND CONCLUSION

The current study attempted to test predicting factors' effect on regional crime rates by applying a theoretical framework of social disorganization and routine activities theories. Based on the hierarchical regression analysis results, the study confirmed some predicting factors on regional crime rates.

Socio-economic status factors related to social disorganization theory and environmental factors related to routine activities theory were synthesized in the final analysis model. Among the factors related to social disorganization theory, residential mobility and disadvantage ratio were not significant factors affecting the local crime rate. However, community heterogeneity, which includes rates of foreign population and single-person households, was significantly impacting the local crime rate. The social disorganization factors became less significant when the environmental variables related to routine activities theory were included in the analysis model. This result was noteworthy because the routine activities factors could act as mediators on local crime rates; the local crime rates were not only determined by community heterogeneity but also the environmental situation. Moreover, the number of commercial places per square kilometer was the only factor that affected the local crime rate among routine activity variables. Being related to crime opportunity, suitable targets can be exposed more to motivated offenders in the areas with more commercial places providing more opportunity for people to gather .

Although the current study results did not show consistent findings from those previous studies that supported the integrated theories, these results still provide new evidence to reconsider theory implication. For example, ethnic heterogeneity reinterpreted as the area's diversity (e.g., foreign population, single-person household rates) showed significant relations with the regional crime rate. Moreover, unlike previous studies, the current study did not present significance on poverty and residential stability, the variables of the original theoretical model. These results may suggest that researchers might need to interpret the original independent variables into more specific variables.

Even though the current study found limited support on synthesized model analysis, it should be noted that environmental factors can affect regional crime rates. The study also found that commercial places were associated with crime rates. More security measures should be implemented when commercial places are established in the area.

This research validated regional factors affecting local crime rates within criminological theories. Still, some limitations exist in data construction and analysis. Even the study's data was collected based on the rule using the most recent data that was publicly available, these were obtained from different public sources and time frame. Therefore, there may be some inconsistencies across the data. Also, because the current study relied on externally available, some factors (i.e., local unemployment rate, community-level crime rates) were excluded in the study.

In addition, more relevant data and advanced analysis could have improved the interpretation of the findings. Because the data in the current study was at the regional level, more advanced data analysis techniques such as geographical crime analysis (GIS) or geographically weighted regression (GWR) can overcome the possible omission of geographical relations among the areas in regular regression analysis. For instance, GIS uses the local community as the unit of analysis, which allows including geographic proximity as one of the variables in the analysis model (Reid, Tita, & Valasik, 2011).

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# Exploring Gender Disparity in Capable Guardianship Against Identity Theft: A Focus on Internet-Based Behavior

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## Abstract

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Despite the growing literature on identity theft, limited studies have been conducted to explore demographic differences between individuals in levels of self-protection measures. Additionally, previous research indicates that men are less likely to employ self-protection measures compared to women, but the potential mechanisms to explain this gender difference remain unclear. Using the 2016 Identity Theft Supplement of the National Crime Victimization Survey in the U.S., the current study examined the interrelationship between gender, Internet-based behaviors (e.g., online shopping, credit card use, and debit card use), and the use of self-protection measures. Our logistic regression models revealed that the use of debit cards to make purchases online mediates the relationship between gender and the decision to employ self-protection measures.

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## Keywords

Identity Theft, Capable Guardianship, Internet-Based Behaviors, Cyber Security

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## INTRODUCTION

Identity theft involves stealing personally identifiable information and misusing it (Allison, Schuck, & Lersch, 2005; Pontell, 2009). Personally identifiable information refers to various types of information linked to a specific individual, including name, residential address, or governmental or official individual identification (e.g., social security number, tax information, driver's license number, and medical information). This stolen information will be likely used for secondary offenses such as credit card fraud, scams, or voice phishing (Irvin-Erickson & Ricks, 2019). Thus, identity theft is an ever-increasing threat to many people in this digital age. In the United States, 16.7 million online customers fell victims to identity theft in 2018 (Pascual, Marchini, & Miller, 2018), and identity thieves were estimated to acquire approximately \$17 billion in 2018 alone (Marchini & Pascual, 2019). Recognizing the importance of identity theft, the Federal Bureau of Investigation also started collecting data regarding identity theft using two primary data platforms, the Uniform Crime Report in 2016 and the National Incident-Based Reporting System in 2019 (Piquero, 2018).

The knowledge base regarding identity theft is rapidly growing. Risk factors associated with victims and offenders of identity theft have been identified (Copes & Vieraitis, 2009; Holtfreter, Reisig, Pratt, & Holtfreter, 2015; Irvin-Erickson & Ricks, 2019; Marcum, Higgins, Ricketts, & Wolfe, 2015; Reyns, 2013; Reyns & Henson, 2016), and perceptions of identity theft have also been of interest among researchers (Choi, Kruis, & Choo, 2021; Piquero, Cohen, & Piquero, 2011; Roberts, Indermaur, & Spiranovic, 2013). Scholars have also examined the consequences of identity theft victimization, including the emotional and physical tolls on victims (Golladay & Holtfreter, 2017; Randa & Reyns, 2019).

One area that has received limited attention is individuals' prevention efforts to avoid identity theft victimization. The lack of this research area is critical given that identity theft can be prevented even if strongly motivated offenders find the perfect target as long as capable guardianship (e.g., self-protection measures) is present according to routine activities theory (Cohen & Felson, 1979; Felson & Eckert, 2019). Recently, one study was conducted by Ylang (2020) to explore the relationship between demographic factors and self-protection measures. Further, many studies highlighted different patterns of internet-oriented behaviors or routines between men and women (e.g., Bae & Lee, 2011). For example, it has been found that women tend to show

consistent shopping at online markets compared to men while perceiving higher levels of risk of online victimization (Garbarino & Strahilevitz, 2004). Taken together, the current study is intended to replicate Ylang's findings using a different dataset (i.e., the 2016 Identity Theft Supplement from National Crime Victimization Survey) and explore the mediating roles of Internet-based behaviors between gender and taking precautionary measures against identity theft. Specifically, we expect that women are more likely to use debit cards to make purchases online, which subsequently increases the employment of self-protection measures.

## LITERATURE REVIEW

### **Routine activities theory and identity theft**

Cohen and Felson (1979) proposed the routine activities theory to explain the conditions that need to be met for crime to happen. They were interested in explaining changes in crime trends after World War 2 and argued that a substantial shift in the structures of routine activities increased the risk of various crimes during this time period. Specifically, they suggested that the three elements need to converge for a crime event to take place: a motivated offender, a suitable target, and the absence of capable guardianship. After World War 2, Cohen and Felson noted that the United States had experienced rapid economic growth, resulting in more valuable items available (i.e., suitable targets) and that more people were working outside their houses, leaving attractive items on the property left unguarded (i.e., absence of capable guardianship). Since the emergence of the theory, it has been one of the dominant theoretical frameworks used by scholars interested in understanding crime opportunity and risk factors of victimization (Miller, 2013; Wolfe, Marcum, Higgins, & Ricketts, 2016).

It is critical to clarify the distinction between a suitable target and capable guardianship so that these two concepts are not overlapped in this study. The concept of suitable target is focused on the attractiveness of a target (Ylang, 2020). If a target appears to be rich with multiple values of items, he/she can be considered a suitable target. On the other hand, capable guardianship is focused on the potential target's ability to protect themselves. This concept is known as personal guardianship (Kabiri, Choi, Shadmanfaat, & Lee, 2022).

Researchers have also suggested that the routine activities theory can be applied to a variety of crime that occurs in the virtual world (Brady, Randa, & Reynolds, 2016; Clarke, 2004; Yar & Steinmetz, 2019). With the advent of diverse Internet-connected devices, the convergence in space and time between motivated offenders and potential victims has become easier. A recent US Census Bureau report based on a representative sample of US residents indicated that 92% of all households had at least one type of computer (e.g., desktops, laptops, tablets, and smartphones), and 85% had access to the broadband Internet home in 2018 (Martin, 2021). Additionally, advancements in the smartphone industry have made it possible for people to be increasingly interconnected with each other (Greenwood, Perrin, & Duggan, 2016). Although the Internet and mobile devices have contributed to increasing the productivity of our society, identity thieves have exploited these tools to steal and misuse other people's personally identifiable information.

Researchers recognized the applicability of routine activities theory to identity theft and began testing the theory using empirical data. Several studies have been conducted to examine the link between online routines and identity theft victimization. Anderson (2006) used data from the Federal Trade Commission's identity theft survey and found that certain demographic factors were associated with identity theft victimization. He used the logic of the routine activities approach to account for the observed effects of demographic variables on identity theft victimization. For example, he argued that older consumers tend to have fewer credit cards and make fewer purchases, reducing victimization of identity theft. Similarly, the number of children in the households was a significant predictor of the increased risk for identity theft victimization because more transactions are likely to happen in the households with more children, and they may have less time to adopt precautionary measures against identity theft victimization. Reynolds (2013) used the data from the British Crime Survey and tested whether online routines were associated with the risk of identity theft victimization. He controlled for individual characteristics such as gender, age, and marital status in his statistical model to estimate the relationship between online routine activities and victimization. Although not all online routine activities were significantly associated with identity theft victimization, online banking and using email or instant messaging were positively related to it. Also, downloading music, films, or podcasts was a significant predictor of identity theft victimization. He suggested that these online routine activities could have increased the exposure of potential targets to motivated offenders.

In the following study, Reyns and Henson (2016) sought to answer how the three components of routine activities related to identity theft victimization using the Canadian General Social Survey data. They considered banking, booking, purchasing, and social networking as online exposure to motivated offenders, while categorizing posting personal information and visiting risky websites as target suitability. Self-guardianship was measured using whether respondents used antivirus software, deleted emails from unknown senders, and regularly changed the password of their accounts. Interestingly, none of the variables considered for guardianship was significantly associated with identity theft victimization. However, their study could not address the temporal ordering issue, so it is not clear whether target hardening did not work against identity theft victimization. Holtfreter et al. (2015) conducted a study about identity theft victimization among one of the most vulnerable population groups, Internet users aged 60 years and older. They found that low self-control increased the risk of identity theft victimization and, more importantly to the current study, risky remote purchases (buying an item after receiving an unsolicited email from an unfamiliar business) mediated the relationship between low self-control and identity theft victimization. Low self-control predicted risky remote purchases, which subsequently increased the risk of identity theft victimization among the older population.

While the number of studies on identity theft is growing, most of these studies have been focused largely on victims and offenders. However, as Felson and Eckert (2019) noted, crime can happen only when the offender finds “a target without a guardian” (p. 29). Therefore, it is critical to understand the social phenomenon of capable guardianship involving identity theft. Given that cyberspace makes it easier to avoid traditional guardians, from parents to law enforcement, personal guardianship (e.g., taking protective actions against identity theft) is particularly important. However, this area has received relatively less attention from the literature.

### **Self-protection measures against identity theft**

Various efforts have been made to prevent identity theft, including legislative regulations to punish identity thieves and organizational efforts to protect personally identifiable information (Gerard, Hillison, & Pacini, 2004; Piquero, 2018). For example, legislative efforts include the Fair and Accurate Credit Transaction Act of 2003, which grants individuals the right to report fraud alerts to agencies that compile and maintain data on consumers and ask for a credit report from credit reporting agencies. Similarly,

the Identity Theft Penalty Enhancement Act of 2004 enhances criminal penalties for identity thieves (Holtfreter & Holtfreter, 2006). Organizational efforts include services provided by the Federal Trade Commission or the Identity Theft Resource Center, helping victims handle and manage identity theft cases. Unfortunately, government actions are inadequate to prevent all identity theft threats, highlighting the role of potential victims in taking self-protection measures against identity theft.

Personally identifiable information can be easily leaked if individuals are not careful about how they handle their information (Burnes, DeLiema, & Langton, 2020). For example, individuals may not change their passwords for their online and financial accounts or protect them in a secure way (e.g., auto-fill functions). Also, they can heighten the risk of identity theft by being careless about how they take care of the documents that contain personally identifiable information (e.g., using trashcan without shredding them). While some people use security software programs to protect their private information, others are less attentive to this issue. Similarly, individuals can ensure the security of their information by checking banking or credit card statements and credit reports. In short, the risk of identity theft victimization is dependent significantly on potential victims.

Several studies have been conducted to understand patterns of self-protection measures (Gilbert & Archer, 2012; Milne, 2003; Milne, Labrecque, & Cromer, 2009; Ylang, 2020). Gilbert and Archer (2012) used data from 3,017 residents in Canada in their study of identity theft and fraud and found that the experience of credit card theft and fraud shaped consumers' concerns about identity theft victimization, which in turn resulted in changes in detection/protection measures against identity theft victimization. Milne et al. (2009) studied whether different levels of self-protection measures (e.g., virus checker installed on the computer, the use of a combination of letters, numbers, and symbols in password, or upgrading the web browser to the newest version) were associated with perceived privacy threat which is related to the severity of the consequences of the threat. Although the perceived level of privacy threat was an important factor in predicting protective behaviors, perceived likelihood of online threats which is related to how likely that threats can be actualized was not. Risky online behaviors (e.g., saved passwords on computer, saved credit card information in an online store's database, or using unsecured networks) were also significantly related to protective behaviors. However, these studies did not conceptualize the importance of self-protection measures against identity theft victimization as the presence of capable guardianship from the routine activities theory.

Ylang (2020) recently used the routine activities approach to underscore the importance of self-protection measures against identity theft victimization and explored the demographic factors associated with these precautionary measures. Using data from the 2014 Identity Theft Supplement of the National Crime Victimization Survey, she found that the decision to take protection measures was related to gender, previous victimization, and awareness regarding the right to obtain a free credit report. However, no research has been conducted yet to replicate this study using a different dataset. Additionally, no mechanisms have been explored to understand the relationships between demographic factors and identity theft victimization that she found.

### **Gender differences in Internet-based behaviors**

The current study focuses on one specific demographic factor, gender, and investigates how it influences self-protection measures engagement. The relationship between gender and self-protective measures has been observed in Ylang's (2020) study. But it is not clear whether this relationship would be observed in a different study and, if then, why that would be the case. Previous research has yielded conflicting findings regarding the relationship between gender and victimization. While some researchers found that women are more likely to fall victim to identity theft than men (e.g., Anderson, 2006), others discovered that men are more likely to be victims of this type of cybercrime than women (e.g., Reyns, 2013). Still, others have not found any significant relationship between gender and identity theft victimization (Harrell, 2019).

On the other hand, the literature on marketing and information management has shown that men and women are significantly different in some online behaviors (e.g., Bae & Lee, 2011; Bighiu, Manolică, & Roman, 2015; Kimbrough, Guadagno, Muscanell, & Dill, 2013; Van Slyke, Bélanger, Johnson, & Hightower, 2010). For example, men and women exhibit different patterns of presentation in their social networks (Huang, Kumar, & Hu, 2018). Women tend to post content associated with relationships and emotions, while men are more likely to post content associated with status (Griskevicius et al., 2007; Tifferet & Vilnai-Yavetz, 2014). Some research indicated that women are more likely to engage in compulsive buying compared to men and find more satisfaction from online shopping (Koran, Faber, Aboujaoude, Large, & Serpe, 2006; Okazaki & Hirose, 2009).

Some scholars have investigated whether women and men have different perceptions of the risks of online purchasing. The findings have shown that women tend

to perceive more risks in purchasing online (Garbarino & Strahilevitz, 2004). Additionally, women are more likely to be concerned about the loss of privacy through the Internet compared to men (Bae & Lee, 2011; Bartel Sheehan, 1999). Therefore, women may be cautious about using credit cards to make purchases online, which carries financial and credit score risks. Instead, they may try to use debit cards to buy products online. Scholars have also found that men and women process data differently; men tend to put less effort into collecting and evaluating all available information to make purchases online, whereas women tend to gather comprehensive information for their purchasing decision (Kim, 2020; Richard, Chebat, Yang, & Putrevu, 2010).

A fair amount of research indicates that women tend to be more risk-averse when making financial decisions (Almenberg & Dreber, 2015; Charness & Gneezy, 2012; Croson & Gneezy, 2009). Relatedly, women have been shown to exhibit greater discomfort with debt and consider debt less useful than men (Haultain, Kemp, & Chernyshenko, 2010; Meyll & Pauls, 2019). Similar patterns are highlighted in Internet-based behaviors in the literature on gender differences in online behavior and attitudes (Kanwal, Burki, Ali, & Dahlstrom, 2022). For example, men find online shopping more attractive and have higher levels of intention to buy things online than women (Hasan, 2010; Lissitsa & Kol, 2016). In addition, men tend to spend a larger amount of money purchasing items online than women (Liu, Lin, Lee, & Deng, 2013). Also, women tend to report higher levels of concerns about privacy and security issues than men, which subsequently leads them to be less likely to pay online (Faqih, 2016; Midha, 2012). In other words, women exhibit a stronger preference for security and privacy issues in Internet-based behaviors compared to men. As a result, women are less likely to use online financial transactions.

Another important discussion to explain different patterns of Internet-based behaviors between men and women involves the distinction between the use of credit and debit cards (Qureshi, Rehman, & Qureshi, 2018). Banks typically issue debit cards, and individuals can withdraw money using debit cards from automatic teller machines. Customers can also use debit cards electronically to make purchases as long as sufficient money is in their deposit accounts. Although credit cards can be used to make electronic financial transactions, the biggest difference with debit cards is that there is no money needed to be deposited. Instead, credit card customers have a certain credit limit, and they can pay off the statement balance before the end of their billing cycle. Because of high credit card interest rates, if the statement balances are not paid in full every month, credit card users can face a big amount of credit card debt. As noted previously, research

has shown that women are more concerned about possible privacy and security issues, and the consequences of credit cards being misused can be detrimental to their financial situation (Faqih, 2016; Midha, 2012). Therefore, women may be more likely to use debit cards to make financial transactions online compared to men. Surprisingly, the gender disparity in the use of credit and debit cards to make purchases online has not been studied. The current study addresses this issue.

Studies reviewed above suggest that men and women engage in different Internet-based behaviors and different perceptions regarding online shopping. There are three potential ways that Internet-based behaviors may influence individuals' decisions to adopt personal self-protective measures. First, cautious online shopping behaviors (e.g., the use of debit cards to purchase online) can trigger consumers to consider other ways to protect their privacy and sensitive information (e.g., checking credit reports) by increasing the perceived risk of identity theft. Second, it is also possible that the small habit of careful online behaviors helps consumers develop other habits that can prevent security issues, such as adopting more protective measures. People who are already using an identity theft protection service or software are likely to take additional steps to prevent identity theft victimization. Piquero et al.'s (2011) study showed that people who currently subscribed to an identity theft protection service were more willing to pay for the government anti-identity theft programs. Third, Internet-based behaviors may be a behavioral measure of other underlying traits (Gottfredson & Hirschi, 1990; Keane, Maxim, & Teevan, 1993; Ward, Gibson, Boman, & Leite, 2010). For example, using a debit card to purchase online may reflect self-control because those individuals take into account the long-term, adverse outcomes of their decisions. Taken together, it can be argued that gender may be related to different patterns of using personal capable guardianship, which is to take self-protection measures against identity theft.

### **Current Focus**

This study is intended to replicate Ylang's (2020) findings using the 2016 Identity Theft Supplement and identify the factors associated with the use of capable guardianship. This article also explores the mechanisms through which gender is linked to the decision to take self-protection measures. Specifically, Internet-based behaviors (i.e., online shopping, the use of debit cards to make purchases, and the use of credit cards to make purchases) are hypothesized to mediate the relationship between gender

and self-protection measures against identity theft. The following hypotheses will be tested.

*H1: There will be a difference in taking protective measures against identity theft between men and women.*

*H2: There will be difference in internet-based behaviors between men and women.*

*H3: Internet-based behaviors mediate the relationship between gender and self-protection measures against identity theft.*

## METHODS

### Data

The current study uses the data from the National Crime Victimization Survey collected by the US Census Bureau for the Bureau of Justice Statistics. The NCVS is a nationally representative survey administered to US residents from approximately 90,000 households. All members of the chosen households above 12 years old participate in the survey. Seven interviews are conducted repeatedly over three years to investigate patterns of victimization regarding property and violent crime. Supplemental questionnaires are occasionally accompanied by the NCVS to cover special topics that are not often included in regular surveys.

The current study uses the data from the 2016 Identity Theft Supplement. This survey has been administered in the past three surveys as well (2008, 2012, 2014). The 2016 ITS includes various survey items related to identity theft victimization, the types of accounts that respondents used, and the nature of identity theft victimization (e.g., misuse of an available account or creation of a new account). Additionally, respondents were also asked whether they had adopted seven different types of self-protection measures against identity theft in the past 12 months, such as checking credit reports and changing passwords on financial accounts.

## Measures

### Dependent variable

The dependent variable reflects respondents' capable guardianship prepared for self-protection. Respondents were asked if they took the following seven types of self-protection measures in the past 12 months: (1) checking credit report, (2) changing passwords on financial accounts, (3) purchasing credit monitoring services or identity theft insurance, (4) destroying documents that contained personally identifying information, (5) checking banking or credit card statements for unfamiliar charges, (6) using security software program on computer to protect it against loss of credit cards/card theft, and (7) purchasing identity theft protection from a company that offers protection services. Replicating Ylang's (2020) study, capable guardianship is operationalized to be a dichotomous variable (0 = took no protective measures, 1 = took protective measures). Some respondents indicated refusal or "don't know" to these questions, so these cases were treated as missing values.

### Independent variables

Three types of Internet-based behaviors were used in this study: (1) online shopping, (2) use of credit card for online purchases, and (3) use of debit cards for online purchases. Specifically, respondents were asked how many times they had purchased something online during the past year. The online shopping was recoded (0 = never, 1 = 1–50 times, 2 = 51–100 times, 3 = 101–150 times, 4 = 151–200 times, 5 = 201 and more times). Payment credit was based on the item asking if respondents had used credit cards to complete online purchases (0 = no, 1 = yes). Payment debit was based on the item asking if respondents had used debit cards to complete online purchases (0 = no, 1 = yes). Gender was a dichotomous variable (0 = women, 1 = men).

### Control variables

Several demographic measures were included as control variables. They include age (respondents' ages in years), race (0 = White, 1 = Non-White), marital status (0 = not married, 1 = married), income (1 = <\$5,000, 2 = \$5,000–\$7,499, 3 = \$7,500–\$9,999, 4 = \$10,000–\$12,499, 5 = \$12,500–\$14,999, 6 = \$15,000–\$17,499, 7 = \$17,500–\$19,999, 8 = \$20,000–\$24,999, 9 = \$25,000–\$29,999, 10 = \$30,000–\$34,999, 11 = \$35,000–\$39,999, 12 = \$40,000–\$49,999, 13 = \$50,000–\$74,999 and 14 = >\$75,000), education (1 = elementary/middle school; 2 = high school; 3 = college, and 4 = advanced degree),

prior identity theft victimization (0 = no victimization related to the misuse of credit/debit/automated teller machine cards and checking/savings accounts, 1 = had experienced victimization), credit card (0 = no credit card, 1 = at least one credit card), bank account (0 = no bank account, 1 = at least one bank account), and awareness (0 = do not know where to get a free credit report from the National Credit Bureau, 1 = know where to get a free credit report from the National Credit Bureau). These measures were used as control variables for several reasons. First, previous research has shown that age, gender, and household income are important variables in understanding identity theft victimization as well as consumers' use of self-protection measures (Gilbert & Archer, 2012; Reyns, 2013). Second, although research on anti-identity theft measures is nascent, there are several variables that would be critical in understanding capable guardianship against identity theft. For example, prior victimization may prompt consumers to be more cautious about their future victimization, and this connection could also be drawn from criminological research on fear of crime (Lane, Rader, Henson, Fisher, & May, 2014). Those who have been victimized tended to be more afraid of their future victimization (Bachman, Randolph, & Brown, 2011; Choi & Merlo, 2021; Choi, Yim, & Lee, 2020; Ferguson & Mindel, 2007). Similarly, identity theft victimization may also make consumers more vigilant about additional victimization and take self-protective measures. Lastly but equally important, the primary goal of this study was to replicate Ylang's (2020) findings using a more recent dataset. To properly replicate her study, it was critical to include the variables Ylang (2020) used in her statistical model. Her logistical regression models revealed that age, marital status, sex, education, prior misuse, bank account, credit card, and awareness were found to be significantly associated with capable guardianship against identity theft. Table 1 provides the weighted descriptive statistics of the variables used in the current study to present population estimates.

Table 1. Weighted Sample Descriptive Statistics

Variable	Obs	M or %	SD	Minimum	Maximum
Capable guardianship against identity theft (1 = Yes)	93,111,963	87.50	—	0	1
Gender (1 = Men)	124,518,834	47.94	—	0	1
Age	119,083,670	46.91	18.62	16	90
Race (1 = Non-White)	124,567,603	20.36	—	0	1
Marital status (1 = Married)	123,638,376	59.63	—	0	1

Variable	Obs	M or %	SD	Minimum	Maximum
Income	93,171,501	11.28	3.52	1	14
Education	121,776,186	2.39	1.03	1	4
Prior identity theft victimization (1 = Yes)	94,164,571	12.09	—	0	1
Credit card (1 = Yes)	94,337,760	71.88	—	0	1
Bank account (1 = Yes)	94,354,743	88.48	—	0	1
Awareness (1 = Yes)	93,908,093	69.56	—	0	1
Online shopping	53,729,509	1.18	0.62	1	5
Payment credit (1 = Yes)	55,323,728	71.63	—	0	1
Payment debit (1 = Yes)	55,300,721	45.75	—	0	1

Abbreviation: M = Mean, SD = Standard deviation

### Analytic Strategy

The analyses proceeded in three steps. First, a crosstabulation was computed with the Pearson chi-square test to examine whether there was a significant difference in taking protective action between men and women. Second, a series of bivariate analyses were performed to identify patterns of Internet-based behaviors between men and women. Finally, two logistic regression models were estimated to assess the impact of gender on adopting self-protective measures against identity theft and whether the Internet-based behaviors mediated this relationship. NCVS-supplied weights were considered in these analyses.

## RESULTS

Table 2 provides the results from the crosstab for capable guardianship by gender. As predicted, there was a significance difference between men and women in taking protective actions against identity theft,  $\chi^2(1, n = 94,906) = 36.32, p < 0.001$ . More bivariate analyses were followed to see if gender disparity was observed in different Internet-based behaviors. Table 3 indicates that no significant difference was found in online shopping between women ( $M = 1.180, SD = 0.003$ ) and men ( $M = 1.184, SD = 0.004; t(55,337) = -0.758, p = 0.448$ ). Men and women did not show any difference in their use of credit cards to make purchases online,  $\chi^2(1, n = 56,757) = 0.23, p = 0.630$  (See Table 4). However, a significant difference in the use of debit card payments to

make purchases online was observed between men and women. Women were more likely to use debit cards to buy things online compared to men,  $\chi^2 (1, n = 56,736) = 67.751, p < 0.001$  (See Table 5).

Table 2. A crosstab for capable guardianship by gender

		Female	Male	Total
Capable guardianship	No	5,593	5,472	11,065
	% Within gender	11.07	12.33	
Yes		44,929	38,912	83,841
	% Within gender	88.93	87.67	
Total		50,522	44,384	94,906

Note: There was a significant difference between men and women on whether they engaged in self-protection measures ( $\chi^2 = 36.32, p < 0.001$ ).

Table 3. Independent-samples *t*-test for online shopping by gender

Variable	Female		Male		t value
	M	SD	M	SD	
Online Shopping	1.180	.003	1.184	.004	-0.758

Note: There was no significant difference between men and women on how frequently they do online shopping ( $t (55,337) = -0.758, p = 0.448$ ).

Table 4. Crosstabs for credit card payment by gender

		Female	Male	Total
Credit card payment	No	8,852	7,316	16,168
	% Within gender	28.57	28.39	
Yes		22,132	18,457	40,598
	% Within gender	71.43	71.61	
Total		30,984	25,773	56,757

Note: There was no significant difference between men and women on whether they use credit cards to make purchases online ( $\chi^2 = 0.23, p = 0.630$ ).

Table 5. Crosstabs for debit card payment by gender

		Female	Male	Total
Debit card payment	No	16,410	14,544	30,954
	% Within gender	52.99	56.44	
Yes		14,559	11,223	40,598
	% Within gender	47.01	43.56	
Total		30,969	27,767	56,736

Note: There was a significant difference between men and women on whether they use debit cards to make purchases online ( $\chi^2 = 67.751, p < 0.001$ ).

Model 1 in Table 6 displays the results from the logistic regression model that includes all the variables but internet-based behaviors. The model was statistically significant,  $\chi^2(10, 74,599) = 8618.40; p < 0.001$ . The model accounted for about 30.51% of the variance in taking self-protection measures against identity theft. As predicted, men were less likely to adopt self-protective measures compared to women (Odds Ratio = 0.848,  $p < 0.001$ ). Older individuals were more prepared for potential identity theft (Odds Ratio = 1.002,  $p < 0.05$ ). Non-Whites were less likely to engage in self-protective measures compared to Whites (Odds Ratio = 0.748,  $p < 0.001$ ). Higher income was associated with higher levels of capable guardianship (Odds Ratio = 1.024,  $p < 0.001$ ), and education level was positively and significantly related to guardianship (Odds Ratio = 1.297,  $p < 0.001$ ). Prior victimization was one of the most important factors that influenced the adoption of self-protective measures, increasing individuals' levels of guardianship (Odds Ratio = 4.122,  $p < 0.001$ ). Respondents who had the previous victimization experience were 4.1 times as likely to take self-protective measures compared to those without prior victimization experience. Having a credit card and bank account was significantly and positively associated with guardianship (Odds Ratios = 1.297 and 5.955, respectively,  $p < 0.001$ ). Awareness was related to the increased exercise of capable guardianship against identity theft (Odds Ratio = 3.014,  $p < 0.001$ ).

Three variables were added to Model 1 in Model 2 in Table 6. All of the variables retained their statistical significance except for gender. Older individuals were more prepared for potential identity theft (Odds Ratio = 1.026,  $p < 0.001$ ). Non-Whites were less likely to engage in self-protective measures compared to Whites (Odds Ratio = 0.697,  $p < 0.001$ ). Higher income was associated with higher levels of capable guardianship (Odds Ratio = 1.033,  $p < 0.001$ ), and education level was positively and significantly related to guardianship (Odds Ratio = 1.297,  $p < 0.001$ ). Prior victimization was positively and significantly associated with individuals' levels of guardianship (Odds Ratio = 2.789,  $p < 0.001$ ). Having a credit card and bank account was significantly and positively associated with guardianship (Odds Ratios = 2.789 and 4.751, respectively,  $p < 0.001$ ). Awareness was related to the increased exercise of capable guardianship against identity theft (Odds Ratio = 2.731,  $p < 0.001$ ).

Once the Internet behaviors were considered, the statistically significant relationship between gender and capable guardianship disappeared, indicating the mediating role of Internet-based behaviors. Marital status became statistically significant (Odds Ratio = 0.869,  $p < 0.05$ ). Online shopping and the use of debit cards to pay online were statistically significant in predicting capable guardianship (Odds

Ratios = 1.573 and 1.607, respectively,  $p < 0.001$ ).

Table 6. Logistic regression predicting capable guardianship

Variable	Model 1		Model 2	
	Odds Ratio	SE	Odds Ratio	SE
Gender (1 = Men)	0.848***	0.028	0.930	0.062
Age	1.002*	0.001	1.026***	0.003
Race (1 = Non-White)	0.748***	0.029	0.697***	0.054
Marital status (1 = Married)	0.963	0.034	0.869*	0.062
Income	1.024***	0.005	1.033***	0.010
Education	1.297***	0.023	1.297***	0.045
Prior identity theft victimization (1 = Yes)	4.122***	0.363	2.582***	0.362
Credit card (1 = Yes)	3.290***	0.128	2.789***	0.270
Bank account (1 = Yes)	5.955***	0.218	4.751***	0.399
Awareness (1 = Yes)	3.014***	0.101	2.731***	0.189
Online shopping	—	—	1.573***	0.203
Payment credit (1 = Yes)	—	—	0.952	0.090
Payment debit (1 = Yes)	—	—	1.607***	0.127
<i>N</i>		74,599		45,785
Pseudo $R^2$		0.305		0.219

Note. SE = standard error

\* $p < .05$ ; \*\*\* $p < .001$  (two-tailed tests).

## DISCUSSION

Only a limited amount of research has been conducted to identify the factors associated with capable guardianship against identity theft. However, capable guardianship is an important element that can substantially reduce the increasing number of identity theft victims. The current study was intended to replicate Ylang's (2020) findings using a more recent dataset and investigate the mechanisms that may account for the gender disparity in taking protective measures against identity theft. Using data from a large sample of US residents, the study revealed three major findings.

First, a significant difference in capable guardianship between men and women was observed. Men were less likely to take precautions to prevent identity theft victimization. This pattern was consistent with the findings from Ylang's (2020) study. Internet-based behaviors were identified as a potential mechanism that can help unpack the relationship between gender and precautionary measures.

Second, three different types of Internet-based behaviors were examined, but only one variable, the use of debit cards to make purchases online, was significantly different

between men and women. Using a debit card instead of a credit card may reflect individuals' levels of self-control because individuals may be aware of the negative outcomes of credit cards misused by identity thieves and consider this possibility in their decision-making (Gottfredson & Hirschi, 1990; Holtfreter, Reisig, & Pratt, 2008; Reyns, Fisher, Bossler, & Holt, 2019; Turanovic & Pratt, 2014). However, the use of debit cards may represent individuals' sensitivity to potential risks of identity theft victimization. Women may be more sensitive to the danger of identity theft compared to men. Previous research has shown that women may perceive higher levels of risk related to crime and express higher levels of fear of crime, whether it be a street crime or cybercrime (Choi et al., 2021; Roberts et al., 2013; Yu, 2014).

Third, the relationship between gender and self-protective measures disappeared once the Internet-based behaviors were entered into the logistic regression model. This may imply that Internet-based behaviors mediated the relationship between gender and capable guardianship. Specifically, online shopping was positively and significantly associated with taking self-protective measures against identity theft, and the use of debit cards predicted higher levels of capable guardianship. If additional research supports the current findings, policymakers should consider gender an important component in designing programs to change Internet-based behaviors. For example, programs to encourage the use of debit cards to make purchases online can be more geared toward men compared to women.

The results from the current study largely support Ylang's (2020) findings, showing that some demographic factors are critical in understanding the decisions to take precautionary actions by individuals. Routine activities theory suggests that crime can be prevented even when one of the three conditions (i.e., motivated offenders, suitable targets, and capable guardianship) is effectively managed (Cohen & Felson, 1979; Felson & Eckert, 2019). Nonetheless, most studies regarding identity theft have been focused on either the factors associated with suitable targets or those related to motivated offenders (Bureau of Justice Statistics, 2020; Holtfreter et al., 2015; Irvin-Erickson & Ricks, 2019; Marcum et al., 2015; Navarro & Higgins, 2017; Reyns, 2013). Additionally, it has not been adequately studied why men and women show different patterns regarding the use of self-protective measures against identity theft. The present study suggests that there may be different mechanisms to account for this gender disparity in identity theft self-prevention, with examples being self-control or risk sensitivity.

## Limitations

Despite its contributions to the literature, there are several noteworthy limitations of this study. First, key variables that would have been critical in understanding capable guardianship were not included in our statistical models because we used secondary data from NCVS. Identity theft researchers can create and administer surveys that capture major theoretical variables, such as self-control and perceived risk of identity theft victimization (Brands & van Wilsem, 2019; Roberts et al., 2013). While the findings from our study helped unpack the relationship between gender and engagement in self-protection measures, specific cognitive processes involved in Internet-based behaviors could not be investigated in our study. Data that can capture respondents' thoughts and feelings can clarify these psychological processes behind different internet-based behaviors. Second, the current study has focused on capable guardianship exercised by potential victims. However, previous research has shown that online guardianship is not solely dependent on potential victims but on people around them (Doty, Gower, Sieving, Plowman, & McMorris, 2018; Khurana, Bleakley, Jordan, & Romer, 2015). For example, significant others can monitor potential victims' online activities and intervene in their use of online devices. Thus, future research can explore the factors related to capable guardianship not only adopted by potential victims but also by their significant others around them. Finally, it is important to acknowledge that the data we used were cross-sectional, making it hard to conclude the causal relationships between some key variables. For example, it is unclear whether Internet-based behaviors considered mediators in this study precede the adoption of self-protection measures. More research should be conducted with longitudinal or experimental data to ensure the internal validity of the relationship explored here.

## CONCLUSION

The current study showed that taking personal guardianship against identity theft is not a random phenomenon. There were some significant gender differences in online behaviors, including the use of debit cards to purchase online and taking self-protection measures. The specific cognitive or psychological mechanisms regarding how gender is related to capable guardianship remain unclear, but some Internet-based behaviors may be indirect measures that capture different predispositions, such as self-control and perceived risk. Our analyses using Internet-based behavioral measures suggest a

mediating mechanism between gender and capable guardianship. However, it could not specify what types of affection (e.g., trust in online financial transactions), cognition (e.g., the likelihood of identity theft risk), or disposition (e.g., risk aversiveness) underlies the use of debit cards to make purchases. Identifying these underlying mechanisms would be helpful in developing policies and programs to improve capable guardianship, and this study can be a steppingstone for this future avenue.

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# Commercial Banks' Crime Prevention Strategies Against Armed Robbery Attacks in Ibadan Metropolis, Nigeria

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## Abstract

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Bank robbery is increasingly constituting a serious threat to human safety and security in Nigeria. Thus, the central objective of this study was to investigate the risk factors accounting for the vulnerability of commercial banks to armed robbery attacks despite their adopted crime prevention strategies. The situational crime prevention perspective was employed as a conceptual framework. Data were elicited from chief security officers of 20 commercial banks, 10 bank tellers, and seven officials of the Nigeria Security and Civil Defence Corps (NSCDC) through a combination of in-depth interviews and key-informant interview methods. Results showed that human factors and logistic issues were contributing to the vulnerability of commercial banks to armed robbery attacks. Although banks are consciously investing in technological and non-technological security systems, criminals still consider them suitable targets. It is imperative for commercial banks to regularly conduct thorough background checks on their staffers so as to ensure early detection of employees with criminal tendencies.

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## Keywords

Armed robbery, Bank robbery, Commercial banks, Crime prevention strategies, Nigeria

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## INTRODUCTION

Bank robbery has attained the status of a social problem in Nigeria (Adebayo, 2015; Garuba, 2015). Although it is true that the problem of armed robbery attacks targeting commercial banks is not a recent phenomenon in the country as its emergence dates back to the 1970s just after the conclusion of the Nigerian civil war (Otu, 2010; Ugwuoke, et al., 2021), its frequent occurrence in recent times makes it a serious issue requiring critical attention. Indeed, the prevailing situation in different parts of Nigeria indicates that bank robbery has become one of the dominant forms of armed robbery with many cases being recorded annually (Ezediumo, 2021; Ojomoyela, 2021; PM News, 2019; This Day, 2021; Vanguard, 2018; Vanguard, 2022).

The rising incidence of bank robbery in Nigeria is a major cause for concern because it constitutes a potent threat to human safety and security, fosters an atmosphere of fear and apprehension, and frequently culminates in the destruction of valuable properties. For instance, 12 persons including six policemen and six bank customers were killed in April 2018 during a bank robbery operation in Offa town, Kwara State (Punch, 2018). In another incident that occurred in Isanlu town, Kogi State in June 2020, nine persons were shot dead in the course of a bank robbery operation (PM News, 2020; Vanguard, 2020). Furthermore, seven persons were killed during a robbery operation simultaneously targeting two commercial banks in Osun State on June 2, 2021 (Punch, 2021).

Apart from its obvious deleterious impacts on human lives and material resources, a bank robbery has the tendency of resulting in huge financial losses for targeted banks, it can culminate in loss of employment for bank officials, and it can also force banks located in frequently targeted communities to completely fold-up. Despite the fact that commercial banks in Nigeria are generally being protected by security guards and typically do have different security gadgets installed within their premises, bank robbery is increasingly becoming commonplace in the country (Punch, 2021; Vanguard, 2020; Vanguard, 2022). Thus, it becomes imperative to interrogate the situational and contextual factors underlying the susceptibility of commercial banks in Nigeria to armed robbery attacks.

Although the problem of armed robbery has commanded tremendous scholarly attention in Nigeria, empirical studies specifically focusing on bank robbery are very rare. Adebayo (2015) and Garuba (2015) whose separate studies principally examined

bank robbery analysed the problem using a theoretical approach. Also, other related studies such as those of Kpae and Adishi (2017); Otu (2010); and Otu and Elechi (2015) x-rayed it within the general context of the armed robbery problem in Nigeria. Thus, research of this nature which specifically investigated the risk factors accounting for the vulnerability of commercial banks in Ibadan metropolis to armed robbery attacks despite their adopted crime prevention strategies is apt and timely to the extent that it generated unique insights into the indices that are associated with the occurrence of this form of crime, and also yielded first-hand information that could prove beneficial in the development of useful practical measures that can be employed to effectively combat the crime of bank robbery in Nigeria and elsewhere. Against this background, the specific objectives of this study were to: (a) investigate the reasons why commercial banks are becoming soft targets for armed robbers; (b) investigate commercial banks officials' experiences of armed robbery attack(s); (c) examine the security systems available in commercial banks to prevent armed robbery; and (d) examine the strategies being employed by commercial banks to protect their employees in the line of duty.

## LITERATURE REVIEW

Globally, armed robbery is among the major threats confronting the effective operation of commercial banks (Borzycki, 2003; de la Cruz Lopez et al., 2022; Piaskoski, 2019; Weisel, 2007). In his own analysis of the situation in Italy, Dugato (2014) mentions that bank branches are typically attractive targets to armed robbers because significant amounts of cash are usually available for them to steal in such locations. In the same vein, Alkhawaja, Ibrahim, and Jaradat (2020) lament that the frequency of bank robbery incidents in Jordan has consistently imposed a substantial burden on the country's banking industry. Hansen, Armour, Shevlin, and Elklit (2014) opine that bank employees in Denmark are frequently at the risk of being victimised by armed robbers. Also, Adebayo (2015) laments that bank robbery is increasingly becoming attractive to armed robbers in Nigeria because their criminal operations are usually carried out without any form of hindrance while huge amounts of money are always carted away. Similarly, Otu (2010) notes that bank robbers in Nigeria have, over time, become unafraid of law enforcement officials as they are increasingly relying on the use of sophisticated guns, axes, matchets, and dynamites. In their own evaluation of the crime,

Kamphuis and Emmelkamp (1998) argue that the fact that bank robbery often leads to loss of funds, the destruction of banks' physical properties, the disruption of banks' business operations as well as homicides make it a crime with significant socio-economic consequences.

Typically, banks are well-secured and often maintain elaborate security practices (Borzycki, 2003; Khera and Verma, 2014; de la Cruz Lopez et al., 2022). Wiesel (2007) claims that available security systems in banking environments are usually highly standardised and often electronically operated. Also, Fuller (2014) argues that banks are often characterised by the use of strong environmental crime prevention gadgets, onsite security, and strict cash handling procedures because of the threat that is constantly posed to their commercial operations by robbers targeting them. Weisel (2007) maintains that though most banks rely on the traditional bank security practices such as the use of alarms, surveillance systems, and bait money with the aim of increasing the likelihood of criminals' apprehension, some banks are using more proactive security strategies that are specifically designed to thwart robberies before they even occur, by restricting the amount of cash at hand, by restricting customers' physical access through the installation of bullet-resistant bandit barriers, and by employing the use of access control vestibules (also known as man-catchers). Hansen et al. (2014) ascribe the recorded decrease in the annual rate of bank robbery incidents in Denmark to the adoption of some preventive actions which included the introduction of cashless bank branches, the deployment of machines for cash depositing, surveillance, and the adoption of cash recycling machines. On his own part, Clarke (1990) identifies the responses of many banks in Australia to robbery incidents as including making use of guards, dye bombs, time-delay locks, and popup or bulletproof screens. Generally, banks' security practices are often a reflection of a variety of goals which range from ensuring the safety of customers and employees to attracting more customers, generating profits, protecting their assets, recovering stolen money, and apprehending offenders (Wiesel, 2007).

## THEORETICAL FRAMEWORK

The propositions of situational crime prevention (SCP) perspective as developed by Derek Cornish and Ronald Clarke provided the theoretical guidance for this study.

SCP is essentially built on the ideas of routine activity theory (RAT), rational choice theory (RCT), and crime patterns theory (CPT) (Back & LaPrade, 2020; Cornish & Clarke, 2003; Wortley, 2002). It is mainly concerned with how the occurrence of a crime can be prevented by changing the situational or spatial features present in an environment. In essence, this approach essentially centres on the introduction of discrete managerial and environmental change for the purpose of reducing the opportunity for crimes to occur ... it seeks not to eliminate criminal or delinquent tendencies through the improvement of society, but to make criminal actions less attractive to offenders (Clarke, 1995; Cornish & Clarke, 2003; Reyns, 2010). Thus, SCP primarily seeks to solve and reduce crime problems in an action setting by minutely analysing specific crime types (or problems) for the purpose of uncovering the situational factors that are facilitating their commission (Freilich & Newman, 2016).

Another core assumption of SCP is that opportunity is central to the occurrence of a crime because more opportunities lead to more crime, easier ones attract more offenders, and the existence of easy opportunities makes possible for a "life of crime" (Clarke, 1995; Connealy & Piza, 2018). It also views society as playing a role in inadvertently creating crime through the manufacturing of "criminogenic goods", leaky systems, and poor management/design of facilities (Clarke, 1995). Therefore, it prescribes the adoption of certain measures that will be directed at highly specific forms of crime through the management, design, or manipulation of the immediate environment in which these crimes occur so as to reduce the opportunities for their occurrence (Hough, Clarke & Mayhew, 1980). SCP also recommends the introduction of both "hard" and "soft" interventions in tackling a crime - hard interventions centre on either deterring a potential offender from committing a crime or making it impossible for him/her to commit the crime regardless of his/her intent or level of motivation, while soft interventions essentially involve the elimination of the situational prompts/cues that can increase a person's motivation to commit a crime during specific types of events (Cornish & Clarke, 2003; Freilich & Newman, 2016; Wortley, 2008).

Furthermore, SCP asserts that crime can be prevented through the creation of environmental settings that will, directly and indirectly, impact criminals' perceptions of efforts, risks, rewards, provocations, and excuses (Back & LaPrade, 2020; Cornish & Clarke, 2003; Welsh & Farrington, 2004). Thus, it puts forward five major crime prevention strategies that can further be broken down into 25 different techniques which include: (i) increasing the effort (this connotes physically separating the offender from his/her target through target hardening, access control, screening exits, deflecting

offenders and controlling tools); (ii) increasing the risk (this suggests the manipulation of the environment in as permanent a way as possible to limit criminal opportunities by extending guardianship, assisting natural surveillance, reducing anonymity, utilising place managers and strengthening formal surveillance); (iii) reducing rewards (this entails concealing targets, removing targets, identifying property, disrupting markets and denying benefits); (iv) reducing provocation (this involves understanding and reducing the immediate triggers of criminal events by reducing frustrations and stress, avoiding disputes, reducing emotional arousal, neutralising peer pressure and discouraging imitation); and (v) removing excuses (this connotes setting rules, posting instructions, alerting conscience, assisting compliance, and controlling drugs and alcohol). For a table that fully depicts SCP's 25 crime prevention techniques, see Back and LaPrade (2020) and Cornish and Clarke (2003).

In the context of this current study, the continual exposure of commercial banks in Ibadan metropolis to armed robbery attacks despite the modification of their business environments through the presence of armed security guards and the installation of some vital electronically operated security devices may be due to the actions of human saboteurs who are collaborating with criminals and/or banks' managements inappropriate deployment of security gadgets that are available within their business premises. The existence of these situations (the presence of human saboteurs and inappropriate use of security devices) in commercial banks will bring about a reduction in both the efforts and the risks that are embedded in the successful perpetration of bank robbery operations. Hence, commercial banks will continue to be attractive targets to robbers.

The specific methodology that was employed for the execution of this research in terms of the rationale behind the selection of the study area, the categories of individuals that constituted the study population, the research design that was adopted for the study, and the methods that were employed for data collection as well as the procedure that was utilised for the analysis of the elicited data are discussed in the next section.

## METHODOLOGY

Ibadan city in southwest Nigeria was purposively selected as the study location. The choice of the city was informed by the fact that there are many commercial banks

operating within it. Also, it is among the cities in Nigeria that are notorious for a high rate of armed robbery incidents including those targeting banks (Adebayo, 2021; Agboluaje, 2020; Etuk & Nnam, 2018; Vanguard, 2022). The study population comprised chief security officers of commercial banks, bank tellers, and officials of the Nigeria Security and Civil Defence Corps (NSCDC). The inclusion of officials of NSCDC in the research was deemed necessary because their professional mandates and vocational-related experiences have adequately equipped them with first-hand information on armed robbery attacks targeting commercial banks.

Furthermore, this research was exploratory and cross-sectional in design. Although many branches of commercial banks operating in Ibadan metropolis were visited during the course of the fieldwork exercise, data were only elicited from banks' employees who were willing to participate in the research. Also, the NSCDC officials that were involved in the study were those who had had vocational-related experiences regarding bank robbery investigations. Thus, the total sample size for the study was 37 which comprised 20 chief security officers of commercial banks, 10 bank tellers, and seven NSCDC personnel. The purposive sampling technique was principally employed for the selection of all categories of respondents.

Key informant interviews and in-depth interview methods were principally deployed for data collection. Specifically, in-depth interview was used to elicit data from chief security officers of 20 commercial banks and 10 bank tellers, while seven key-informant interviews were conducted with the officials of NSCDC. A major advantage of the qualitative approach lies in the fact that it allows for a detailed exploration of sensitive topics in context (Isiugo-Abanihe, 2002). However, it is often difficult to generalise its data due to its typical small sample size. The unwillingness on the part of many staffers of commercial banks to participate in the study, owing to the sensitive nature of bank robbery, necessitated the exclusive utilisation of interviews for the in-depth exploration of the subject matter.

Generally, interviews were conducted with the study participants with the aid of a voice recorder through face-to-face informal chats. The qualitative method of data analysis was engaged to analyse the data. The generated data were essentially manually content-analysed. This process involved a careful transcription, detailed description, and meticulous interpretation of the elicited data. This procedure was adopted to facilitate the identification and understanding of the emerging patterns in respondents' submissions. In addition, some of the unique responses given by the respondents in the course of the interviews were quoted verbatim as a way of enhancing the quality of

interpretation and the logicity of the discourse. In addition, this study generally followed the international ethical standards prescribed for the conduct of social research by carefully upholding the principles of informed consent, voluntary participation, confidentiality, and non-maleficence.

## RESULTS AND DISCUSSION

The major findings that emanated from this study are thematically presented, discussed, and interpreted in this section.

### **Reasons Why Commercial Banks are Becoming Soft Targets for Armed Robbers**

To gain in-depth insights into the major indices associated with the frequent occurrence of armed robbery attacks on commercial banks, information was sought from the respondents on the situational and contextual factors exposing commercial banks to armed robbers. Multiple factors were identified by the respondents as contributing to the occurrence of the crime. A chief security officer in one of the commercial banks covered explained the situation this way:

The truth is that they usually (bank management) do not allow security guards to man available security gadgets. For instance, our installed CCTV can only be watched by our branch manager in his office. This is a person who has a lot of assignments on his table. The way we use CCTV in this bank is not the way it should be used. There is meant to be a specific person that is specially mandated to be monitoring the gadget. In actual fact, what this bank mainly uses CCTV device for is to play back some of the recorded events whenever something bad happened. Also, armed robbers attacking banks are not operating alone. They normally have informants who can either be a current staff or an ex-staff of a targeted bank. Some of these robberies are also acts of revenge from sacked bank staffers. This set of people normally furnish armed robbers with confidential information about their banks (*IDI/33/Male/ Bank CSO/ Ibadan*).

An official of NSCDC linked the situation to another reason:

Armed robbers are targeting banks due to the fact that cash has always been the main medium of transaction and operation in Nigerian banks. That is the attraction for robbers. Although banks have tried to go digital, nonetheless they still constantly do need large sum of cash to pay out to their customers and to also feed their ATMs (Automated Teller Machines). So, as long as banks continue making use of cash for most of their transactions, armed robbers will be attracted to them (*IDI/30/Male/NSCDC officer/Ibadan*)

In the words of another respondent:

Banks are becoming more susceptible to armed robbers because there are usually insiders that are supplying them damaging confidential information. Without the existence of such criminal collaborators, armed robbery attacks against banks are not likely to succeed. As long as there are informants giving armed robbers sensitive information, robbery will continue to happen in banks (*KII/36/Female/NSCDC officer/Ibadan*)

Another respondent also stated that:

First of all, robbers targeting banks are well-trained. They are familiar with the functioning of CCTVs, cyber cams and the rest. So, they know that most of the CCTVs that are installed in banks are not usually functional. Also, the weapons at the disposal of security operatives stationed in banks are not sophisticated enough. Police officers guarding banks are also working without the essential safety equipment and protective gears such as helmets and body armours. So, armed robbers always over overpower them whenever they attacked banks. Also, they (robbers) often have their spies and informants working in their targeted banks (*KII/40/Female/NSCDC officer/Ibadan*).

It can be inferred from the above narratives that different factors are responsible for the increasing susceptibility of commercial banks to armed robbery. All the respondents linked the frequent occurrence of bank robbery to a criminal conspiracy between insiders working in banks and armed robbers. Therefore, it can be deduced from this finding that saboteurs are playing a crucial role in the exposure of commercial banks to robbery attacks. Indeed, some low-ranking bank officials had been indicted as collaborating with criminals in some of the recent cases of bank robberies that were successfully investigated by law enforcement officials (Nwachukwu, 2019; PM News, 2019). In a particular incident that occurred in June 2022, a staff of a commercial bank was among a five-man armed robbery gang that was arrested in Ibadan city for planning a bloody robbery attack against his organisation (Olaniyi, 2022). Garuba (2015) and

Garuba and Aigbe (2010) in their studies separately established that bank workers usually resort to committing a crime against their organisations as a result of job pressure and the general state of insecurity pervading the banking industry in Nigeria. Apart from the role of saboteurs, other factors mentioned by the respondents as driving the occurrence of bank robbery were weak security systems, bank management's inappropriate use of security gadgets, and the constant availability of large volumes of cash in banks. The implication of this finding is that commercial banks are increasingly becoming soft targets for armed robbers not because they failed to introduce some discrete managerial and environmental modification measures aimed at reducing the opportunities for the occurrence of robbery incidents in their spaces of business operations. Rather, the expected values placed on their adopted intervention strategies (armed security guards and physical security systems) in terms of increasing the efforts and the risks that are associated with bank robbery perpetration were not met because of the existence of certain situations and conditions (bank staffers collaborating with armed robbers, weak security systems, inappropriate deployments of security gadgets by managements of banks and the constant availability of large volumes of cash in banks) acting together to compromise their overall effectiveness in preventing robbery attack. A similar study conducted in Italy by Dugato (2014) revealed that robbers usually found Italian bank branches attractive because they routinely manage and store significant amounts of cash. Leineweber and Buchler (1991) have equally observed that the best security is bound to fail if it is not properly installed, maintained, and operated.

### **Commercial Banks Officials' Experiences of Armed Robbery Attack(s)**

An investigation was also conducted into bank officials' experiences of armed robbery attack(s) targeting their workplace as a way of understanding the patterns of occurrence of this form of crime. Some of them confirmed that their banks had experienced armed robbery attack(s) at some point in time. One of the chief security officers interviewed described an incident involving his own bank this way:

The incident (bank robbery) happened one night around 11 pm. There were two guards on duty. One of them went out to buy food. Before he got back, robbers had already gained entry into the bank premises. They were able to overpower his colleague and subsequently tied him up. When the guard who went to buy food got back, he was also attacked and tied up by

the robbers. They (robbers) were able to access our ATM gallery. They stole huge amounts of money. Some police officials who were on routine patrol later arrived at the scene after the robbery operation had been successfully carried out. In another incident that happened not too long ago, some robbers gained entry into the bank premises by climbing over a perimeter fence at about 2 am in the morning. They were able to steal some inverters that were being used for power generation in the bank (*IDI/38/Male/Bank CSO/ Ibadan*)

Another respondent shared his own experience thus:

The armed robbery attempt that targeted my bank happened at night. However, they (robbers) were not successful because we made use of a security alarm system that was available in the bank. With the activation of the alarm system, law enforcement officials in one of the nearest police stations were notified of the attack. They responded very fast and were able to abort the robbery operation (*IDI/34/Male/Bank CSO/ Ibadan*).

In the words of another security guard:

The armed robbery that happened here in 2016 did not directly target our bank. However, it occurred within the bank premises. It was on a Thursday morning around 10 am. We noticed a man sitting on a motorcycle that was parked across the road opposite the bank. We could not send him away because he was not sitting very close to our premises. Unknown to us, his two accomplices were in the queue with other bank customers. After some time, they pulled out a gun and shot it into the air to scare people away. They were able to rob a bank customer who came to deposit a large sum of money. Thereafter, they joined the guy waiting for them on the motorcycle and sped off. Law enforcement officials manning our bank were not yet around at the time the incident happened (*IDI/42/Male/ Bank CSO/ Ibadan*)

A bank teller had this to say:

The bank robbery operation that I witnessed happened in the daytime. We knew fully well that they (robbers) were coming as they were already shooting into the air before reaching the bank. We had telephone numbers of some DPOs (Divisional Police Officers) which we called, but their lines were all switched off. The robbers made use of dynamites to gain access into the banking hall. They were shooting sporadically throughout the duration of the operation. After the incident, we (bank staffers) were all arrested for interrogation and questioning (*IDI/36/Male/Bank Staff/Ibadan*).

The above submissions of the respondents indicate that the problem of armed robbery attacks on commercial banks is multidimensional in nature. It was clearly

established in the findings that bank robbery can take place in the daytime and at night hours. It can also be inferred from the findings that some armed robbery attacks occurring within bank premises may be primarily targeted at bank customers planning to deposit large sums of money or at bank customers who visited banks to withdraw huge amounts of money. Equally, some of the respondents mentioned that they had witnessed some robbery incidents that were mainly directed at some valuable items kept within their banks' premises. The implication of this result is that commercial banks are increasingly attaining the status of major crime attractors which criminals consider suitable sites for illegally gaining access to money and other desired valuables. This situation further calls into question the efficacy of commercial banks' security architectures. As can be gleaned from the narratives of the respondents, some of the robbery incidents that were recorded happened as a result of the inadequate number of security personnel guarding banks, poor access control, and weak surveillance capacity of installed security systems. Therefore, commercial banks that had been victims of armed robbery attacks might not have done enough to adequately deter criminals from targeting them. This could be a result of the fact that they have not put in place certain discrete measures that can be employed to increase the efforts and the risks that are associated with the occurrence of armed robbery within their business environments. Adebayo (2015) and Garuba (2015) have separately observed that staffers of commercial banks in Nigeria generally operate under an atmosphere of fear due to the incessant attacks on bank premises by armed robbers. Furthermore, this result validates a key element of SCP which states that society plays a role in inadvertently creating crime through the manufacturing of "criminogenic goods", leaky systems, and the poor management/design of facilities (Clarke, 1992).

### **Security Systems Available in Banks to Prevent Armed Robbery Attacks**

Studies have established that the likelihood of the occurrence of a crime in a given place is often determined by the level of security existing within such a location (Brantingham & Brantingham, 1995; Ojedokun & Oduoye, 2019). Thus, respondents were probed on the security systems that are being employed by their banks to forestall the occurrence of armed robbery. A female teller in one of the commercial banks covered submitted thus:

We have mantrap doors, CCTV cameras, and security doors that cannot be easily accessed even when blown up. Also, as per the bank policy, there is a special sum of money that is expected to be set aside for such a situation (bank robbery). So, whenever such an incident occurs, it is that money that would be stolen. Also, we usually deposit money with the Central Bank of Nigeria from time to time. We also have police officials stationed within our bank premises on a daily basis *(IDI/26/Female/Bank Staff/Ibadan)*

An interviewee also said:

In terms of the physical security architecture, there are CCTV cameras mounted in all corners of our bank. We also do employ the services of personnel of the Nigeria Police Force and officials of NSCDC. We cannot open for our daily business operation until these security agents are fully on the ground to protect us *(IDI/28/Male/Bank Staff/Ibadan)*

Another respondent explained thus:

My bank invests a lot in security. Our branch manager has the telephone numbers of police stations around here. There is also an installed CCTV device through which security footage are accessed from our head office. Lastly, there is a pepper spray system that would automatically trigger off if anyone violates the expected security protocol *(IDI/28/Male/Bank Staff/Ibadan)*

In the opinion of another female bank staff:

There are CCTVs everywhere right from the entrance of the bank. The CCTVs never shut down. This is why an inverter power generating system is installed in the bank. Even when we are not at work, the CCTV still runs. We also have security doors at all points of entry and exit. A security alarm system that automatically triggers off whenever there is an observed security breach is also available *(IDI/25/Female/Bank Staff/Ibadan)*

It is evident from these findings that commercial banks recognised their risk of exposure to armed robbery. Thus, they are consciously investing in technological and non-technological security systems to prevent its occurrence. The technological security systems embraced by banks as established in the study involved the installation and utilisation of physical security apparatuses and crime prevention devices such as CCTVs, mantrap doors, security alarm systems, body scanners, pepper spray gadgets, and metal detectors. The non-technological aspect of their security strategies included employing

private security guards, making special requests to the Oyo State Police Command for law enforcement officials that will guard them during their daily business operations, limiting the volumes of cash at hand, intentionally setting aside special sums of cash for such an incident, and strategically collaborating with divisional police stations nearest to their locations of operation. Therefore, it can be deduced from this finding that the combination of human strategies and technological security systems by commercial banks is an indication that they are not only adopting a proactive approach towards the prevention of armed robbery incidents, but it is also a pointer to the fact that they are also strategically making provisions for the possibility of being targeted by robbers. Fuller (2014) has also observed that due to the constant threat of robbery attacks, banks are often characterised by the utilisation of strong environmental crime prevention, onsite security, and strict cash handling procedures. This result also supports a major proposition of SCP which asserts that the occurrence of a crime can be prevented through the adoption of certain measures that will be directed at highly specific forms of crime through the management, design, or manipulation of the immediate environment in which these crimes occur so as to reduce the opportunities for their occurrence (Hough et al., 1980).

### **Reasons Why Armed Robbers are not Discouraged by Banks'**

#### **Security Architectures**

Since it was established that commercial banks typically do install different security gadgets within their premises, it was considered important to investigate why armed robbers targeting them are not being discouraged by the existing security architectures available within their premises. Respondents ascribed criminals' non-desistance to different reasons. A key informant described the situation this way:

They (armed robbers) cannot be discouraged because they are usually under the influence of hard drugs. Thus, they are always motivated to go above their limits. Also, since they do have access to arms and ammunition that are necessary for carrying out their assignments, they usually do not care about the outcome of their actions. No form of security system will stop them. In a nutshell, the influence of drugs combined with access to sophisticated weapons will boost their courage (*KII/36/Female/ NSCDC officer/Ibadan*)

A bank CSO submitted thus:

From the videos of the robbery operations captured by CCTV devices, one could see that they (bank robbers) were professionals. Some of them were dismissed by police/military officials. So, they are well-trained and they have sophisticated weapons. With all the provisions, skills, and weapons they possess, nothing can discourage them whenever they set out for an operation (*IDI/32/Male/Bank CSO/ Ibadan*)

In the opinion of another bank staff:

Bank robbers will not be discouraged by the security systems available in banks because they are usually successful in their criminal operations. They are always able to successfully steal large sums of money from banks because they always have informants working in such targeted banks; and this usually makes the conduct of their operations easy. So, when robbers realised that they are always getting huge amounts of money from their criminal operations, they will always want to continue (*IDI/26/ Male/Bank Staff/Ibadan*)

Another respondent had this to say:

Yes, banks have many security gadgets and robbers know the risk involved. Thus, they would have studied the security architecture and know the weak links existing in a targeted bank's security system. Also, we do know that in certain situations, there are some insiders working with some of them. There are usually weak links in any security system no matter how secured. Although we have security doors and scanners, they are usually blown up with dynamites. There are also policemen, but then there is a limit to what they can do (*IDI/30/Male/Bank Staff/Ibadan*)

It can be established from this result that in spite of the security systems available in commercial banks, criminals are being motivated by different factors to target such locations for robbery operations. The main factor that was identified by all the key informants and most of the interviewees as propelling criminals to target banks for robbery attacks was the existence of criminal insiders who they are conspiring with. Other factors mentioned by the respondents as boosting armed robbers' criminal courage included the successes of their previous bank robbery operations, access to sophisticated arms and ammunitions, perceived weak security systems of banks, their previously acquired relevant professional training (for former law enforcement officials), and the use of hard drugs. The implication of this finding is that the combination of the successes of past similar robbery operations together with access to confidential security information from criminal insiders in banks, access to crime facilitation tools and crime commission-aiding training were motivating robbers to

target commercial banks in spite of their adopted crime prevention security systems. These situations act together to reduce the effectiveness of commercial banks' intervention measures that are aimed at increasing the efforts and the risks that are embedded in the act of bank robbery operation. Clarke (1990) has also observed that in spite of the fact that banks' security measures have increased the risks of apprehension and reduced the chances of injury to staff, it is difficult to determine whether they have also reduced robbery incidents. Furthermore, the involvement of some ex-law enforcement officials in bank robbery operations is a demonstration of the fact that armed robbery attacks targeting commercial banks may remain a very difficult challenge to tackle if the identified shortcomings that are embedded in their adopted crime prevention strategies are not holistically and systematically addressed. This result also brings to the fore, the relevance of a core assumption of SCP that more opportunities lead to more crime, easier ones attract more offenders, and the existence of easy opportunities makes it possible for a "life of crime".

### **Strategies Being Employed by Banks to Protect Their Employees in the Line of Duty**

The security and safety of employees in the workplace are among the major determinants of the extent of their job dedication and job commitment. Hence, information was sought on the strategies that commercial banks were adopting to protect their employees in the line of duty. All the banks' employees interviewed expressed similar opinions. An interviewee stated that:

When it comes to that (bank robbery), we have been coached by our management not to interrupt them (robbers) whenever they are operating so that we do not get killed. So, cooperation with armed robbers is very important during bank robbery because all the money in the bank is insured, but one's life is not (*IDI/41/Male/Bank CSO/Ibadan*)

In the words of another bank staff:

Well, we are just praying seriously against it (bank robbery). They (management) have told us that we should give in to robbers' requests in such a situation. We are advised not to put our lives on the line. Also, they usually advised us to always leave bank premises early. Once we noticed that colleagues are closing for the day, we are expected to also leave because it is possible that the person who has the key to the bank's vault has also closed for the day (*IDI/27/Female/Bank Staff/Ibadan*)

A respondent among the bankers also submitted thus:

Bank management usually sensitise us (staffers). We also do go for professional training on how to protect ourselves and how to stay safe on the job. We are advised not to live a flamboyant lifestyle as it can attract robbers. Also, we are always advised to leave the banking hall early. My bank makes it mandatory for staffers to always close early by activating a 7 pm shut down policy (*IDI/25/Female/Bank Staff/Ibadan*)

Another respondent described the strategy being adopted by his own bank this way:

A very important standard protocol in my bank is that we have to be sure that bank security guards and law enforcement officials posted to our organisation are fully on the ground before we can commence our daily business operations (*IDI/42/Male/Bank CSO/ Ibadan*)

These narratives show that bank management was making conscious efforts to protect their employees in the line of duty. The major protective strategies being adopted in this regard include advising employees not to interfere with an ongoing armed robbery operation, exposing staffers to periodic training on workplace security and safety, encouraging employees to always leave bank premises before dusk, and not open for business operations without the presence of armed law enforcement personnel. A major deduction that can be made from this finding is that bank managements have recognised the fact that their organisations could still be exposed to armed robbery incidents in spite of the human and technological security systems available within their premises. Consequently, they have put in place certain measures to mitigate the risk of criminal victimisation that their employees are likely to be exposed to in a situation of armed robbery attack by coaching them on the essential safety tactics that can be adopted for their protection. By mandating an early-closure policy (which amounts to setting of rules and posting of instructions under the removing excuses technique of SCP), managements of banks are adopting a proactive measure to safeguard their employees from getting exposed to the risk of criminal victimisation that can arise from working late in their offices. Also, the coaching of staffers by their managements to always accede to the demands of criminals during robbery operations is a strategy that is aimed at discouraging them from engaging in any activity that could provoke robbers to kill or inflict grievous bodily harm on them and/or their customers. This conforms with the reducing the provocation technique of SCP which emphasises the understanding and reducing the immediate triggers of criminal events by reducing

frustrations and stress, avoiding disputes, and reducing emotional arousal. Furthermore, this finding also agrees with the position of Weisel (2007) that bank managers typically do direct their employees to comply with robbers' demands because of their concerns for the security and safety of all stakeholders.

### **Policy Implications**

The findings yielded by this study demonstrate its importance in terms of policy implication. Indeed, its outcome can serve as a useful framework and benchmark for designing far-reaching measures and result-oriented policies that can assist the Nigerian Government and stakeholders in the banking sector as well as law enforcement agencies to eliminate the risk factors exposing commercial banks to armed robbery attacks.

First, there is a need for commercial banks to regularly conduct thorough background checks on their low-ranking staffers so as to ensure the early detection of employees with criminal tendencies. This step is not only capable of reducing the opportunity for a criminal conspiracy between insiders and armed robbers, but it will also further strengthen the existing human and technological surveillance in such locations. Relatedly, more cautious efforts should be exerted by banks to ensure that confidential information bordering on the security practices of their private guards and law enforcement officials stationed on their premises as well as the sensitive information about the operations and functionalities of their security managers are not accessible to bank staffers who have no direct bearing to security maintenance. The elimination of possible criminal conspiracy between informants working in banks and armed robbers will automatically increase the efforts required for the successful perpetration of bank robbery since criminals would no longer have access to damaging confidential security information. Also, the successful blockage of all loopholes that are responsible for the leakage of sensitive security information will increase the risks that are associated with bank robbery because criminals would no longer have access to compromising information about the nature of security architectures available in banks.

Second, it is imperative for the management of commercial banks to make their employees aware that their vocational-related activities are being closely monitored while also consistently informing them about the costs of being involved in a criminal conspiracy against their organisation. This step will not only help to alert their conscience, but it will also go a long way in assisting employees with criminal tendencies to comply with stipulated rules and regulations. This can be achieved by

including in staffers' professional codes of ethics, the punishments attached to robbery perpetration which according to the Nigeria's Robbery and Firearm(s) (special provisions) Act range from 14 years imprisonment to life imprisonment or even capital punishment depending on the gravity of the offence committed. The provisions of this legal sanction can also be posted in strategic locations within the premises of banks.

Also, it is important for commercial banks to ensure that the technological components of their security architectures are appropriately deployed by ensuring that they are routinely operated, monitored, and controlled by experts, and are regularly serviced and maintained for optimal performance. Similarly, necessary logistic supports and motivations should be provided for security guards stationed in banks by ensuring that they are periodically exposed to relevant professional training and are equipped with sophisticated weapons and personal protective equipment (PPE) If this step is achieved, it will most likely increase the efforts as well as the risks that will be associated with bank robbery perpetration because the strategic combination of a properly activated technological crime prevention apparatuses and well-motivated security guards would result in high access restriction and control to location, increased surveillance, hardening of targets, and increased risk of apprehension for criminals.

Equally, the constant availability of large volumes of cash in commercial banks was identified as one of the major factors motivating criminals to target them. Therefore, there is a need for the Central Bank of Nigeria to introduce a practical institutional framework through which its cashless policy drive can become fully entrenched. On the one hand, bank customers should be encouraged to embrace the culture of the electronic banking systems and the utilisation of agency banking services. On the other hand, commercial banks should be mandated to introduce the use of a Cash Deposit Machine (CDM) through which their customers can deposit cash directly into their bank accounts, while also deploying more functional ATMs nationwide. The wide adoption of cashless policy will culminate in the reduction of monetary rewards that are derivable from engaging in the act of bank robbery as only a limited amount of cash will then be available in banks. Thus, this will culminate in the disruption of criminals' anticipated benefits of a bank robbery because the prescribed measure would have successfully separated them from their target (cash).

Furthermore, the Nigerian Government should make more efforts towards effectively controlling the circulation of small arms and light weapons (SALW) in the country. The actualisation of this step will go a long way in reducing the frequent occurrence of bank robbery incidents. Criminals' lack of access to lethal weapons and

other operational tools which they normally relied upon for the perpetration of bank robbery would further lead to the increase in the efforts and the risks that will be associated with the crime. In addition, the frequency of bank robbery in Nigeria also makes it expedient for commercial banks to partner with the police for the purpose of designing a workable framework through which the gunshot detection system can be strategically incorporated into their extant physical security systems. The gunshot detection system is a useful technological innovation that is specifically designed to aid police investigations of gunshots incidents by making use of acoustic sensing technology to detect, discriminate and report gunshots events to the police as soon as shots are being fired (Choi, Librett & Collins, 2014). If adopted, the gunshot detection system could prove to be a critical incident response intervention measure that will be relevant for addressing bank robbery because it has the potential for increasing the risk of apprehension for criminals making use of guns and dynamites.

Finally, there is a need to launch a massive public campaign against the crime of bank robbery. The Nigeria Police Force, commercial banks, and the mass media can strategically partner together to champion this cause by aggressively running public adverts, aimed at promoting the value of engaging in legitimate ventures while also simultaneously emphasising the punishments that are prescribed for armed robbery as contained in the Nigeria's Robbery and Firearm(s) (special provisions) Act, on print and electronic media. Equally, criminals found guilty of engaging in bank robbery should be publicly paraded with their photographs and videos widely circulated on popular social media platforms. These steps can go a long way in alerting the conscience of convicted robbers and other potential offenders as well as assisting them to comply with societal rules and regulations (which is the removing excuses component of SCP) in the future.

### **Limitations of the Study and Suggestions for Future Research**

Two major limitations are associated with this research. The sampled population was small in size. Also, the study was principally restricted to only one city in Nigeria. Thus, these may impact the extent of generalisability of its results. Therefore, future studies focusing on this form of crime should expand the population size of their sample and the number of study locations to be covered. However, in spite of these identified limitations, this current study contributes to the fields of criminology and security studies by generating practical information on the situational and contextual factors

exposing commercial banks to armed robbery as well as the pitfalls inherent in their adopted crime prevention strategies. In addition, it has also further expanded the frontiers of knowledge by contributing to the existing body of literature on the crime of bank robbery.

## CONCLUSION

This study investigated the risk factors accounting for the vulnerability of commercial banks to armed robbery attacks despite their adoption of certain crime prevention strategies. The factors identified as making commercial banks susceptible to armed robbery included criminal conspiracy between insiders working in banks and armed robbers, weak security systems existing in banks, improper use of security gadgets by the management of commercial banks, and the constant availability of large volumes of cash in banks. Although commercial banks are consciously investing in technological and non-technological security systems to prevent robbery incidents, criminals are being motivated by certain factors to consider them as suitable targets for victimisation. Therefore, for commercial banks' adopted crime prevention strategies to be effective, all the situational and contextual factors that are compromising their efficacy have to be strategically identified, individually analysed, and systematically eliminated.

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