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# Framework towards Residential Neighbourhood Crime Prevention in South Western Nigeria

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## **Abstract:**

*The need to curb the soaring trend of residential neighbourhood crime, considering its negative impact on the neighbourhood in general and property value in particular is not to be given the expected attention in academia and government settings. However, the consequences of residential neighbourhood crime are found to be devastating. Hence, this study proposes a Socio-Environmental Design Factors (SEDeF) model for residential neighbourhood crime toward improving property value in Nigeria. Purposive and systematic sampling techniques were adopted, while logistic regression and Structural Equation Modeling (SEM) was used to analyse the data and achieve the set objectives. The findings showed that social risk factors (poverty, unemployment, juvenile delinquencies, illiteracy, and homelessness) and the environmental design factors (natural access control, surveillance, efficient maintenance, territorial functioning, and target hardening) are capable of influencing residential neighbourhood crime in Nigeria. The results of the analysis find the set hypotheses to be significant. This is shown through the regression weights and p-values of the influence of the social risk factors and environmental design factors on residential neighbourhood crime to be 0.69 (0.000) and 0.14 (0.000), respectively. Also, the impact of residential neighbourhood crime on property value gives regression weight and p-value at 0.47 and 0.000, respectively. The model fitness is further guaranteed by the  $R^2$  which stands at 52%. The interpretation of these results is that applying social development programmes to tackle the social risk factors and purposeful manipulation of the residential neighbourhood through design could go a long way to decrease neighbourhood crime and boost property values. This research serves as an awakening call to the Nigerian government, policymakers, and researchers to tackle property crime to ensure housing sustainability and property value appreciation, among others.*

**Keywords:** CPSD, CPTED, Crime Prevention, Property crime, SEDeF, SEM

## **1. Introduction**

Housing is generally ranked next to food in the hierarchy of human needs. This explains why the issue of housing is usually taken seriously by individuals and the government alike. The social theory believes everyone needs to be properly housed as this has a lot to do with the efficiency of labour which later transforms to the prosperity of a country's economy or otherwise (Agunbiade, 2012). Apparently, housing fulfils three functions needed by humans, namely, physical, psychological, and social functions. Physical needs by providing security and shelter satisfy psychological requirements by providing a sense of personal space and seclusion. It achieves social needs by providing a gathering area and communal space for the human family, the basic unit of society. In many societies, it also accomplishes economic needs by working as a centre for commercial production, which is shown by the interaction of the housing market, which calls for collaboration between the house seller/owner and the house buyer/renter with the assistance of the estate agent who acts as a facilitator. Little wonder, considering the aforementioned relevance of housing to mankind, Thiele (2002) considered the human right to housing as a tool for promoting and preserving individual and community health. Housing, however, goes beyond the physical building and transcends all the environmental characteristics that will make the building habitable and sustainable. Prominent among these is the physical security of lives and wealth, which is a challenging factor in residential neighbourhood sustainability (Hirschfeld et al., 2014; Tahir & Malek, 2018).

Generally, homeowners and occupants are usually prone to various forms of insecurity ranging from natural disasters (floods, earthquakes, hurricanes, sandy landslides, and tsunamis, among others) and man-made anxiety, which constitutes mainly property and violent crimes. Essentially, urban crime and fear of it are within a culture of violence (Louw, Robertshaw, & Mtani, 2001). Internationally, urban crime rates are soaring, particularly in cities of developed and developing nations (Gibbon, 2004; Alabi, Adeleke & Olajide, 2021). Fear of crime is often linked to fear for one's safety, especially when alone and in the dark. Fear of crime may keep residents off the streets and other public areas. It may also create a barrier to participating in the public life of cities (Alabi, Adeleke & Olajide, 2021). Louw et al. (2001) recognised, among others, physical environmental factors subsequent to poor urban design and management of the urbanisation process, insufficient urban services, and failure to incorporate security-related issues in urban management policies as contributing factors to rising urban crime.

Studies have also indicated that the crime rate in a particular neighbourhood can influence the property values or prices, which often translate to discouragement in property investment (Boggess et al., 2013; Valez et al., 2012). Researchers assume that buyers are willing to pay more for living in neighbourhoods with lower crime rates or that the buyer expects discounts for purchasing houses in neighbourhoods with higher crime rates. In addition to the buyer and seller, other actors in housing transactions may play roles in bringing about these economic impacts (Pope & Pope, 2012). Concerns about crime, perhaps spurred in part by actual crime, can influence judgments of property values made by assessors, realtors, and lenders. Lower house values in higher-crime locations also can translate into lower property tax returns, further eroding the community's economic base (Pope & Pope, 2012).

No doubt, crime leads to loss of life and property destruction, as well as an overwhelming fear of insecurity. Most countries of the world are, therefore, looking for additional ways of combating the rising wave and increasing difficulty of urban crime. A 1990 survey by the United Nations discovered that while most countries of the developed world devote an average between 2 and 3 percent of their annual budgets to crime control, those of the developing world spend an average of between 9 and 14 percent. Nigeria is no exception to this. Nigeria has witnessed an upsurge in crimes during the past three decades (Agbola, 1997). The increasing incidence of armed robbery has led to a paralyzing fear which has affected the country's economic and social life. Ibadan, one of the major cities in Nigeria (headquarter of the defunct Western Region of Nigeria), which was known for its safe and secure environment, is in recent years recording a disproportionate level of crime due to uncontrolled dense population (Adigun & Afolabi, 2013). Researchers have also affirmed that neighbourhood crime, among other attributes, can negatively influence property value in Nigeria (Bello, 2011, Ajibola et al., 2011). Despite the crime problem in the country, the successive Nigerian governments rely primarily on the effort of the police in building courts and prisons and are still ignorant of the vast modern concepts and approaches to crime control. In order to bridge this gap with consideration of its devastating effects, this study is set to appraise the influence of socio-environmental design factors of crime prevention on residential property values within the South-western Nigerian residential estates

- Propose a framework for residential neighbourhood crime toward improving property values in particular and
- Enhance the better quality of life as well as ensure residential neighbourhood sustainability in general.

## 2. Discussion of Related Theories

The following theories were discussed for the purpose and need for research framework development in respect of this work. These included:

- Crime prevention through environmental design,
- Crime prevention through social development,
- Opportunity theories, and
- Property value-related theories (see Table 1).

| S/N | Name of Theory  | Thrust of Theory  | Relevance of Theory   | Recent Studies/ Propounder (s)  |
|-----|---|---|---|---|
| 1.  | Crime Prevention Through Environmental Design (CPTED) | The theory asserts that 'the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and an improvement in quality of life.'   | The theory has been tested to have the capacity of checkmating crime opportunities through building design                              | *CPTED by Jeffery, 1971<br>*Defensible Space by Oscar Newman, 1973.<br>*The Broken Windows by Wilson & Kelling, 1982<br>*CPTED by Crowe, 2000 |
| 2.  | Crime Prevention Through Social Development (CPSD)    | Crime Prevention Through Social Development (CPSD) is an approach or concept that acknowledges the underlying complex social, economic, and cultural processes that contribute to crime and victimization. CPSD endeavours to bridge the gap between criminal justice policies and programmes and social support for individuals, families, and communities. It does this by tackling the factors that contribute to crime and victimization and are amendable to change. | This theory is expected to tackle the root causes of crime: the social risk factors like poverty, homelessness, illiteracy, and others. | *Development of Social Model by Hawkin and Weis, 1985.<br>*CPSD by Waller & Wailer, 1985.<br>*Sustainability of CPSD by Hastings, 2008        |

| S/N | Name of Theory                     | Thrust of Theory  | Relevance of Theory  | Recent Studies/<br>Propounder(s)  |
|-----|------------------------------------|---|--|---|
| 3.  | Crime Opportunity Theories         | These theories suggest that offenders make rational choices and thus choose targets that offer a high reward with little effort and risk. The occurrence of a crime depends on two things: the presence of at least one motivated offender who is ready or willing to engage in a crime and the conditions of the environment in which that offender is situated, to wit, an opportunity for crime. | These theories are meant to serve as a lubricant to the other, too, that is, CPTED and CPSD. Also, to address the psychological and social aspects of the crime. | *Situational crime Prevention by Clarke, 1980<br>* Lifestyle Theory by Fattah, 1993.<br>*Rational Choice Theory by Clarke & Cornish, 1985.<br>*Routine Activity Theory by Cohen & Felson, 1979<br>*Crime Pattern Theory by Brantingham & Brantingham, 1981. |
| 4.  | Utility Theory & Open Market Value | The estimate of an amount assuming-exchange, specific date, buyer willing to buy, seller willing to buy, no buyer-seller relationship, period of marketing has occurred, and parties had each acted knowledgeably, prudently, and without compulsion.   | The theory is meant to give the direction of what property value is all about, defining the present worth of future benefit.                                     | Housing value attributes by Bello & Bello, 2008; Babawale & Adewunmi, 2011; Teck-Hong, Tan 2011.  |

Table 1: Analysis of the Underpinning Theories

Source: By Authors, 2021

### 3. Background Information about Nigeria

Nigeria, located in West Africa, borders the Gulf of Guinea between Benin on the west and Cameroon on the east. It is a compact area of 924,768 square kilometres, where the land mass extends from the Gulf of Guinea in the South and the Sahel in the North (Federal Land Information System [FELIS], 2015). Abuja is the country's capital city, while other major cities include Lagos, Ibadan, Kaduna, Kano, Maiduguri, Jos, Port, Harcourt, Enugu, Calabar, Ado-Ekiti, and Aba, among others. Figure 1 is a map of Nigeria showing its major cities and international boundaries (Globe Media Ltd, 2015).

Nigeria's population density is the highest in Africa, ranging from a hundred people per square kilometre in the north-eastern and western central regions to over five hundred people per square kilometre in the south and north-western regions. The 2006 census estimated that the country's population was around 140 million: 50.8% male and 49.2% female, with an inter-census growth rate of 3.2% (National Population Commission of Nigeria [NPC], 2015). However, as of April 2015, the World Factbook puts the country's current population at around 177 million. This population is comprised mainly of young people. A large segment of the population, around 56.8%, has the right to vote or run for office (Adeyemo, 2011).

The residential property business is a profitable venture in Nigeria's urban centers due to the high level of urbanisation. Therefore, residential properties that provide living accommodations for the teeming populace are more pronounced among real estate practitioners, especially compared with other properties like commercial, agricultural, industrial, and institutional properties. However, the return (yield) from the residential property market is considerably lower than that of commercial and industrial properties. However, the residential property market is preferred in the area of security of interest.

The residential property market in Nigeria has, in no small measure, contributed to the nation's gross domestic product (GDP) (Bello *et al.*, 2017; Abidoye & Chan, 2016). Although the residential real estate market attracts more quackery, in the economic sense of it, it provides employment opportunities to many in the form of Small and Medium Enterprises (SMEs).

Like any other nation, Nigeria is not exempted from the surging trend of residential neighbourhood crime. The only difference from other developed nations is the alarming rate at which property crime is being experienced, especially within the Nigerian urban settings (Fabiya, 2006; Agbola, 1997). Studies have identified some reasons for this upsurge, including uncontrolled urbanisation, poverty, unemployment, homelessness, lack of neighbourhood planning, juvenile delinquency, and corruption, among others (Ajibola *et al.*, 2011; Fabiya, 2006). State and local government headquarters where the population is concentrated usually experience residential offences in the forms of burglary, street incivility, robbery, and violent crime, which result in fear, dwindling health, and sudden death.

It is, however, expedient to add that the property market is also negatively affected by this unbecoming trend. Research has shown that crime-prone areas have witnessed environmental neighbourhood decline, stigmatisation, and reduced property value, affecting general real estate business, especially in areas badly affected (Bello, 2011; Babawale *et al.*, 2012).

This study, however, observed that attempt to checkmate this ugly phenomenon remains far-fetched, especially from real estate professionals. Hence, this study has found it necessary to propose a Socio-Environmental Design Factors (SEDeF) model as a panacea to this menace. It is believed that a cure to the residential neighbourhood crime (identified as one of the significant determinants of residential property value) will, by extension, reflect (by way of value appreciation) on the residential property market.

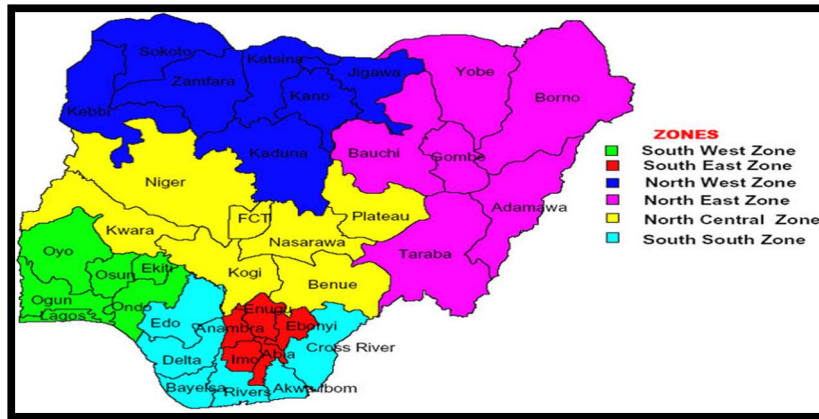


Figure 1: Map of Nigeria Showing South-Western States

4. Research Methodology

4.1. Philosophy and Paradigm of the Research

The research adopted a quantitative method (survey) to answer the what, why, and how research questions are relevant to residential neighbourhood crime prevention. The research philosophy suggested three (3) relevant schools of reasoning:

- Ontology (realism),
  - Epistemology (positivism), and
  - Axiology (objective approach – value-free)
- This is presented in Figure 2 (Sexton, 2003).

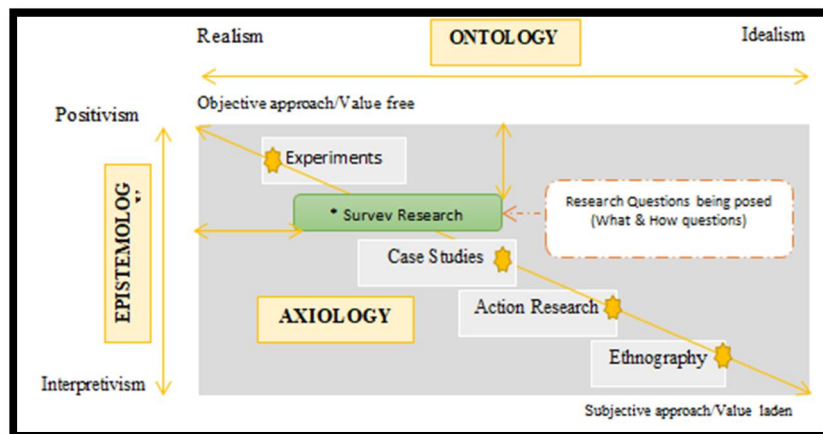


Figure 2: The Research Philosophy and Paradigm

4.2. Sampling Technique for Selection of Respondents

One thousand sets of the questionnaire were administered in this order: Lagos- 400, Ibadan- 300, and Ado-Ekiti- 300, totalling 1000. These diverse figures were arrived at in proportion to the population of the surveyed residential buildings in each city, as shown in Table 2. The questionnaire was distributed to residents (head of household) in the study area. The respondents used purposive (in the sense that only the head of household is eligible to attend the questionnaire) and stratified random sampling. They also selected the estates and the house on which the questionnaire was to be administered. A sample size calculator was used to estimate the minimum sample size required from the population of 5762 residents in the study area (Guthrie, 2010).

| ADO-EKITI      |            |        | IBADAN              |            |        | LAGOS           |            |        |
|----------------|------------|--------|---------------------|------------|--------|-----------------|------------|--------|
| Name of Estate | Population | Sample | Name of Estate      | Population | Sample | Name of Estate  | Population | Sample |
| Irewole        | 264        | 40     | Bodija              | 438        | 72     | Beckley         | 163        | 34     |
| Obasanjo       | 142        | 29     | Calton              | 112        | 25     | Otedola         | 57         | 15     |
| Fayose         | 100        | 23     | Onireke/<br>Jericho | 325        | 62     | Cooker          | 62         | 17     |
| Bawah          | 56         | 15     | Oluyole             | 315        | 60     | Lekki<br>Phase1 | 535        | 77     |
| Adamolekun     | 127        | 25     | Mokola              | 464        | 74     | LSDPC           | 667        | 89     |
| GRA (I)        | 376        | 68     | Total               | 1654       | 293    | 1004            | 1004       | 152    |
| GRA (II)       | 555        | 81     |                     |            |        | Total           | 2488       | 384    |
| Total          | 1620       | 281    |                     |            |        |                 |            |        |

Table 2: Determination of Sample for the Study

Source: By Authors, 2021

This research applied the sample size formula. The study was conducted on a resident population of 2,488 in Lagos metropolis, 1654 in Ibadan, and 1620 in Ado-Ekiti across the three cities under consideration using a confidence level of 95%, confidence interval of 5% (or Standard Error). The sample size needed was 340 for Lagos and 280 for both Ibadan and Ado-Ekiti or more. The sum of 1000 (400 for Lagos, 300 for Ibadan, and 300 for Ado-Ekiti) questionnaires was prepared and administered. A gross total of 534 sets of questionnaires were retrieved from the respondents. After initial vetting of the questionnaires, 46 were discarded as missing values, either with uncompleted items or wrong information entries. The remaining 488 were subjected to further screening covering outlier and multi-collinearity, out of which 21 were further removed, leaving a sum of 467 which were found usable for the research. Hence, the survey response rate based on the total number of questionnaires administered was 53.4%. Justification for the adequacy of the response rate is based on the data collection covering an extensive area of three (3) geopolitical states and considering the limited time set for the research (Nulty, 2008). Furthermore, the response rate was compared with existing related research, which recorded 55% on field surveys conducted within a single estate (Marzbali et al., 2012) and 38% on a field survey conducted on two (2) estates at different geographical locations (Sakip et al., 2012).

The main instrument used for data collection was the questionnaires. The respondents' views and opinions were gathered using a 5-point Likert scale questionnaire. This method is effective because it allows the respondent enough time to give the needed information (Bernard, 2013). Direct observation was also used to serve as a reconnaissance survey and to personally assess the security provisions and condition of the building and environment. This visual survey provided information that was used to verify the authenticity of the questionnaire's respondents. The method provides first-hand and direct information needed in the research.

The data acquired through questionnaires to answer the research questions were summarized and analyzed using MS Excel 2013, SPSS v22, and AMOS v20. The respondents' comments on the open-ended questions in the questionnaire were equally quantified and used in the analyses. AMOS was employed to establish the influence of social risk factors and environmental design factors on residential neighbourhood crime and to measure the impact of residential neighbourhood crime on residential property values mainly because a theory testing research requires a confirmatory analysis tool.

The area of investigation 1 addressed the impact of social risk factors (SRF) on residential neighbourhood crime (RNC). This aims to test the desirability of social development programmes to curb residential neighbourhood crime (The Howard Society of Alberta, 1995; Hasting, 2008). The area of investigation two chiefly addressed the influence of environmental design factors (EDF) on residential neighbourhood crime (RNC). This measured the possibility of the environmental design in controlling residential neighbourhood crime (Abdullah *et al.*, 2016; Cozens & Love, 2015).

The area of investigation 3 addressed the relationship between residential neighbourhood crime (RNC) and residential property values (RPV). The main intention of the third investigation is to determine the impact of residential neighbourhood crime on residential property values. Hence, the link between the three investigations is that if there is a link between the socio-environmental factors and residential neighbourhood crime, it may reflect on the residential property values as one of the incidences of neighbourhood crime.

#### 4.3. Data Analysis

##### 4.3.1. Multi-collinearity Evaluation for the Constructs

As a point of emphasis, according to Pallant (2011), multi-collinearity is the presence of a strong correlation between predictor variables. Therefore, the internal validity of multiple regression analysis is more threatened by multi-collinearity, which raises the possibility of errors in the hypothesis testing (Awang, 2014).

In this regard, entire constructs in this research were examined for the presence of multi-collinearity. Therefore, satisfying items in each construct were explored for this purpose. Furthermore, both AMOS and SPSS correlation matrices were employed to test the presence of multi-collinearity in the entire research construct.

Figure 3 and Table 3 present the multi-collinearity evaluation. The result showed no multi-collinearity among the entire constructs in this research. Furthermore, these analyses ascertained that the highest correlation score is 0.71, which is less than the recommended value of 0.85 or 0.90 (Awang, 2014). Therefore every construct could be used for the structural equation modelling analysis.

|     |             |             |             |             |
|-----|-------------|-------------|-------------|-------------|
|     | <b>SRF</b>  | <b>EDF</b>  | <b>RNC</b>  | <b>RPV</b>  |
| SRF | <b>0.71</b> |             |             |             |
| EDF | 0.12        | <b>0.86</b> |             |             |
| RNC | 0.71        | 0.23        | <b>0.73</b> |             |
| RPV | 0.31        | 0.02        | 0.47        | <b>0.85</b> |

Table 3: Correlation Matrix for the Entire Research Constructs

**Note:** N=467; Numbers in parentheses are standard error; SRF = Social Risk Factors; EDF = Environmental Design Factors; RNC = Residential Neighbourhood Crime; RPV = Residential Property Value

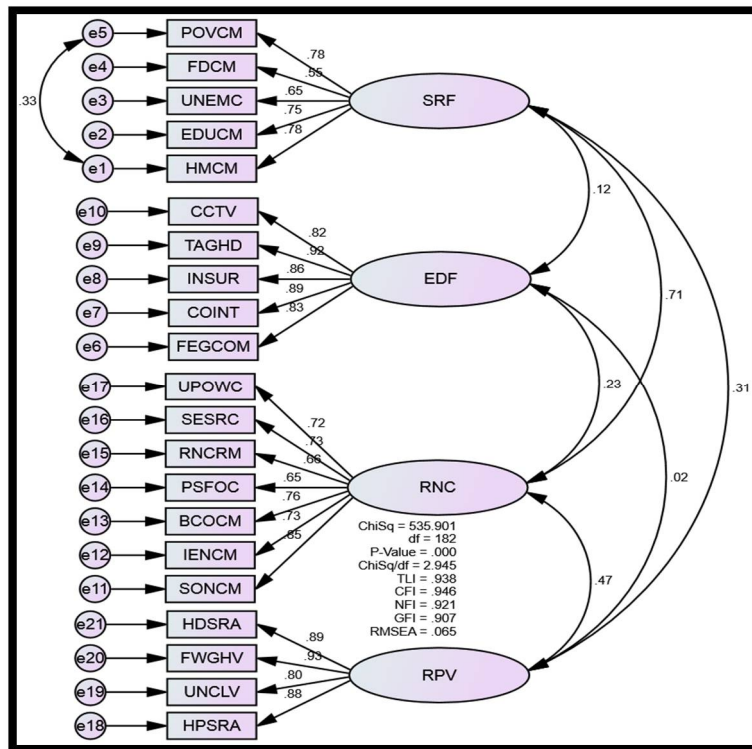


Figure 3: Multi-collinearity Evaluation

### 4.3.2. Unidimensionality

In this study, construct validity was examined by analysing both convergent validity and discriminant validity for the fitness of the structural model. According to Pallant (2011), construct validity is explored by investigating its relationship with other constructs; both related (convergent validity) and unrelated (discriminant validity). According to Hair et al. (2010), Average Variance Extracted (AVE) should not be less than 0.5 to suggest adequate convergent validity, and AVE estimates for two factors to provide evidence for discriminant validity (Hair, et al., 2010). According to Fornell & Larcker (1981), if the AVE is higher than the square of the correlation coefficient among the constructs, it can be asserted that discriminant validity is satisfied. In addition, the reliability is assessed through internal reliability (Cronbach's alpha), Construct Validity (CR), and Average Variance Extracted (AVE).

The requirement of unidimensionality was achieved through the item-deletion process of low factor loading in the respective latent constructs. After modification, all items in the measuring models had factor loadings greater than the threshold requirement of 0.6 (Awang, 2014 and 2015) after modification (Table 4). In Table 4, CR stands for Composite Reliability, while AVE stands for Average Variance Extracted; both were calculated using the formulae in Table 5, while Cronbach's alpha was calculated using the SPSS.

| Construct                          | Items  | Factor Loading                                   | Cronbach's alpha $\geq 0.7$ | CR $\geq 0.6$ | AVE $\geq 0.5$ |
|------------------------------------|--------|--|-----------------------------|---------------|----------------|
| Social Risk Factors (SRF)          | HMCM   | 0.78   | 0.833                       | 0.83          | 0.50           |
|                                    | EDUCM  | 0.75   |                             |               |                |
|                                    | UNEMC  | 0.65   |                             |               |                |
|                                    | WPGCM  | This item was deleted due to low factor loading. |                             |               |                |
|                                    | FDCM   | 0.55   |                             |               |                |
|                                    | SDPCM  | This item was deleted due to low factor loading. |                             |               |                |
|                                    | POVCM  | 0.78   |                             |               |                |
| Environmental Design Factors (EDF) | FEGCOM | 0.83   | 0.935                       | 0.94          | 0.74           |
|                                    | CBECM  | This item was deleted due to low factor loading. |                             |               |                |
|                                    | COINT  | 0.88   |                             |               |                |
|                                    | CONEL  | This item was deleted due to low factor loading. |                             |               |                |

| Construct                             | Items | Factor Loading                                   | Cronbach's alpha $\geq 0.7$ | CR $\geq 0.6$ | AVE $\geq 0.5$ |
|---------------------------------------|-------|--|-----------------------------|---------------|----------------|
|                                       | INSUR | 0.86   |                             |               |                |
|                                       | POLPA | This item was deleted due to low factor loading. |                             |               |                |
|                                       | TAGHD | 0.92   |                             |               |                |
|                                       | CCTV  | 0.82   |                             |               |                |
| Residential Neighbourhood Crime (RNC) | SONCM | 0.85   | 0.887                       | 0.89          | 0.54           |
|                                       | GEDNC | This item was deleted due to low factor loading. |                             |               |                |
|                                       | IENCM | 0.73   |                             |               |                |
|                                       | BCOCM | 0.76   |                             |               |                |
|                                       | NSICA | This item was deleted due to low factor loading. |                             |               |                |
|                                       | PSFOC | 0.65   |                             |               |                |
|                                       | RNCRM | 0.66   |                             |               |                |
|                                       | CINC  | This item was deleted due to low factor loading. |                             |               |                |
|                                       | SESRC | 0.73   |                             |               |                |
| UPOWC                                 | 0.72  |  |                             |               |                |
| Residential Property Value (RPV)      | HPSRA | 0.88   | 0.928                       | 0.93          | 0.72           |
|                                       | HLPSV | This item was deleted due to low factor loading. |                             |               |                |
|                                       | UNCLV | 0.80   |                             |               |                |
|                                       | FWGHV | 0.93   |                             |               |                |
|                                       | RPLSA | This item was deleted due to low factor loading. |                             |               |                |
|                                       | HDSRA | 0.89   |                             |               |                |
|                                       | PCIPV | This item was deleted due to low factor loading. |                             |               |                |

Table 4: CFA Results for All the Measurement Models after Modification

4.3.3. Analysis for Structural Equation Modelling

After the research constructs' unidimensionality, reliability, and validity were ascertained, the next stage of the analysis model is the entire constructs into a single structural equation model using Analysis of Moment Structure (AMOS). The reason for the pull-out is to display the causal effects between one construct and the other in line with the set hypotheses.

The exogenous and endogenous variables in the research assessment framework were arranged. The arrangement started with the exogenous variables (Social Risk Factors {SRF} and Environmental Design Factors {EDF}), intervening variable (Residential Neighbourhood Crime, RNC), and the endogenous variable (Residential Property Value, RPV) at the end. The connection between each construct is linked with an arrow in the hypotheses' direction, as presented in Figure 4. However, the model was used to analyse the multidirectional relationships within the entire research construct.

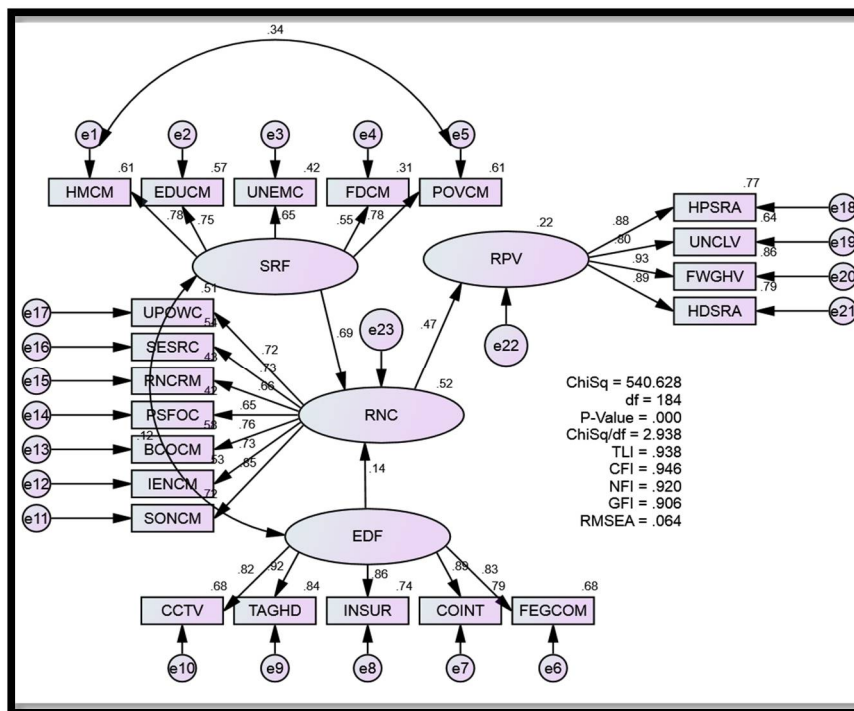


Figure 4: Final Structural Measurement Model Presenting Standardised Regression Coefficient for the Entire Research Constructs

The final structural measurement model analyzed the causal effect (impact) for the multiple constructs in the path diagram. First and foremost, the fitness indexes for the structural model, which reflect how fit is the hypothesized model

with the data at hand, were observed and satisfactory within the established acceptable level of goodness of fitness indexes (Awang, 2015).

The standard regression weights indicated:

- The estimate of the beta coefficient, which measures the impacts of the main constructs,
- Exogenous variables (Social Risk Factors, SRF and Environmental Design Factors, EDF) on the intervening variable (Residential Neighbourhood Crime, RNC) and
- Endogenous variable (Residential Property Value, RPV)

The output in Figure 5 showed the standardized regression coefficients of social risk factors and environmental design factors to residential neighbourhood crime to be 0.69 and 0.14, respectively, with their  $R^2$  equal to 0.52. The regression coefficient of residential neighbourhood crime to residential property value is 0.47, with its  $R^2$  equal to 0.22. The measure of quantity and magnitude of association between the entire constructs were presented in Table 5.

The Analysis Moment of Structures (AMOS) used for the structural equation modelling in this research normally produced two types of text outputs for the path analysis:

- Standardised regression weights and
- Unstandardised regression weights.

However, the standardised regression weight is adopted to explain the relationship among the entire constructs in the theoretical research framework and subsequently for testing the hypotheses in the research as it is recommended to be better as it is easier to interpret (Awang, 2015).

The comprehensive review of literature facilitated the earlier presented hypothesised research model in chapter three, section 3.5 in Figure 3.7. The hypothesised result in the Table 5.32 outlined the outcome of every respected path in the structural measurement model.

| S/N | The Main Hypothesis Statement in the Research  | Estimate | P-Value | Result    |
|-----|--|----------|---------|-----------|
| 1.  | H1<br>Social risk factors (SRF) have a significant and direct effect on residential neighbourhood crime (RNC)      | 0.687    | ***     | Supported |
| 2.  | H2<br>There is a significant relationship between environmental design factors and residential neighbourhood crime | 0.140    | ***     | Supported |
| 3.  | H3<br>Residential neighbourhood crime (RNC) significantly and directly affects residential property values (RPV).  | 0.473    | ***     | Supported |

Table 5: The Summary of the Tested Hypotheses in This Research  
Key: \*\*\* Represents P-Value Is Less Than 0.001

## 5. Result and Discussion

### 5.1. Hypothesis (H1)

Social risk factors (SRF) have a significant and direct effect on residential neighbourhood crime (RNC). The result shows that social risk factors ( $\beta = 0.687$ ,  $z = 12.536$  and  $p = 0.000 < 0.001$ ) are strongly significant to residential neighbourhood crime. Therefore hypothesis H1 is supported and held true. The research outcome confirms that investing in social development programmes like housing, education, employment, family integration, and the citizenry's economic prosperity significantly controlled, checked, and even prevented residential neighbourhood crime. This implies that from the residents' perspective if the government of Nigeria could channel a proportion of its spending to tackle the social risk factors like poverty, unemployment, illiteracy, juvenile delinquencies, and homelessness, among others, its positive effects would be felt in neighbourhood crime prevention.

In addition, this research finding is consistent with the empirical findings by Andresen (2015) and The John Howard Society of Alberta (1995), in which they variously supported that social development programmes significantly influence residential neighbourhood crime. Therefore, the Nigerian government needs to do much more in carrying out more social development programmes to checkmate residential neighbourhood crime within the Nigerian residential estates in particular and Nigerian society in general. Webster & Kingston (2014) also found that any capital sum spent by any government on social development programmes is the right step towards preventing criminal tendencies.

From the above previous empirical studies, the finding of the study can be adjudged to be true that:

- There exists a close relationship between social risk factors and crime and
- Every effort to tackle all the social risk factors must be considered a step toward reducing, if not preventing, criminal tendencies.

### 5.2. Hypothesis (H2)

There is a significant relationship between environmental design factors and residential neighbourhood crime. In the same vein, the research's result found that environmental design factors ( $\beta = 0.140$ ,  $z = 3.400$ , and  $p = 0.000 < 0.001$ ) significantly impact residential neighbourhood crime within the Nigerian housing neighbourhoods. Therefore, the hypothesis is true and empirically supported by this research. This implies that purposeful manipulation of the residential neighbourhood through access control, target hardening, territorial functioning, surveillance, and effective maintenance



would automatically and significantly contribute to a safe and secure residential neighbourhood within the Nigerian context, thereby checking criminal tendencies within the housing estates.

Essentially, this finding is consistent with the past research studies of Marzbali et al. (2016); Abdullah et al. (2013); Marzbali et al. (2012); and Armitage (2006) in which they all tested the desirability of the environmental design and its effect on residential neighbourhood crime. By implication, proper compliance with the CPTED principles would go a long way in checkmating residential neighbourhood crime in Nigeria.

From the preceding, the highlighted previous empirical studies form the basis for which the result of the tested hypothesis that there is a significant relationship between environmental design factors and residential neighbourhood crime could be substantiated. Hence, an effort is expected to be intensified to encourage proper and purposeful environmental planning within the Nigerian residential neighbourhoods to reduce property crime.

### 5.3. Hypothesis (H3)

Residential Neighbourhood crime (RNC) has a significant and direct effect on residential property values (RPV). As presented in the Table 4, research outcome shows that residential neighbourhood crime ( $\beta = 0.473$ ,  $Z = 9.643$  and  $p = 0.000 < 0.001$ ) is significant and have direct effect on property values. The outcome of this research showed strong support for hypothesis H3, as demonstrated in the final structural measurement model (see Figure 5). By implication, therefore, the research finding showed that the prevalence of residential neighbourhood crime in the forms of burglary, incivilities, street crimes, robbery, and even violent crimes has a strong significant, and direct effect on residential property values. Therefore, the above research hypothesis is supported.

In summary, and by implication, residential neighbourhood crime is a great threat to the housing market and neighbourhood civility. This research finding supported the past empirical outcome of Boggess et al. (2013); Pope & Pope (2012); Ceccato & Wilhelmsson (2011); and Ihlanfeldt & Mayock (2010), who reported that residential neighbourhood crime (property crime) has a direct negative effect on residential property values.

Literature has also revealed that scholars have debated crime (security) as a determinant of residential property values.

Some scholars recognise crime as a substantive attribute of residential value (Abidoye & Chan, 2016; Babawale et al., 2012; Famuyiwa & Babawale, 2014).

Some scholars see crime as a subset of neighbourhood characteristics (Sirman et al., 2006; Adegoke, 2014; Chin & Chan, 2002),

Some scholars overly omitted to mention crime as an attribute of the residential property value (Kauko, 2003; Teck-Hong, 2011).

The result of this study has further established that neighbourhood crime (security) is one of the key determinants of residential property value and should be accorded the necessary attention as its consequences on property value and the real estate profession could be devastating.

### 5.4. Proposed SEDeF Model for Residential Neighbourhood Crime

The research objective was to propose a SEDeF model (socio-environmental design factors) to complement the use of traditional crime control techniques for the residential neighbourhood in Nigeria to improve property values and ensure environmental sustainability.

The main thrust of the framework (as shown in Figure 5) dwells on the premise that if the social risk factors (poverty, illiteracy, unemployment, homelessness, and juvenile delinquency), which are referred to as the root causes of crime, could be tenaciously tackled as well as a purposeful manipulation of the residential environment through planning to discourage prospective offender through the application of the CPTED principles (territorial functioning, access control, surveillance, target hardening, and adequate maintenance), the soaring trend of residential neighbourhood crime within the Nigerian residential neighbourhoods would be checkmated.

More importantly, the result of the analysis, which was based on the public (residential neighbourhood residents) perception of the desirability and workability of the model, also supports the model's applicability. The relevance of the model was further ascertained through model validation. The model validation was carried out after research findings had been obtained. The model validation was carried out through a structured questionnaire administered to senior practitioners in the housing and real estate sectors in practice, government, and academia. The result findings from the respondents further attest to the ability of the model to perform better than the current penal system. Also, the validation invariably supports the assertion that a drastic reduction or eradication of neighbourhood crime would positively affect housing through enhanced property value.

In consideration of the application of the model, both government and the private sector have prominent roles to play. On the side of the government, there is a need for the government to

- Make the provision of social development programmes a priority;
- Create political will;
- Establish crime prevention departments, and
- Ensure a well-planned residential neighbourhood environment.

Professionals like realtors, urban planners, and architects, to mention a few, should ensure the proper implementation of government schemes.

In conclusion and generally speaking, the model, if tenaciously implemented, is believed to be capable of enhancing housing sustainability by removing the fear of neighbourhood crime, boosting housing values, increasing government revenue through property tax as well as reducing public expenditure on crime prevention through

procurement of additional police, the building of additional prisons and recruitment of more judges. These expectations agree with previous studies as highlighted in paragraphs (Marzbali et al., 2016; Ekblom et al., 2013; Tita et al., 2006).

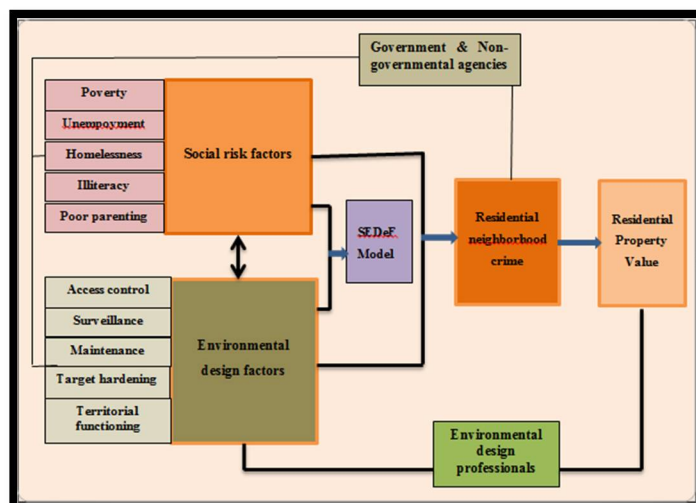


Figure 5: Socio-Environmental Design Factors (SEDeF) Framework

## 6. Conclusion

So far, so good. This research has ordered its goal (recognizing the prevailing and increasing rate of residential neighbourhood crime in Nigeria) on proposing Socio-Environmental Design Factors (SEDeF) model as a panacea for residential neighbourhood crime control anticipated toward improving property values as well as ensuring environmental sustainability. In the course of the research, it was unearthed through literature and personal observation that Nigeria as a nation still depends predominantly on the use of the penal system (use of police, judicial system, and imprisonment) to control crime which research had found to be grossly inadequate.

Taking into consideration the shattering consequences of residential neighbourhood crime, which are felt by the residents, immediate neighbourhood, real estate profession, and government activities, it was seen as being expedient to search for a better approach which had been the main push of this research. However, the significance of the proposed model was viewed as enhancing residential property values.

To enable effective implementation of the model, the Nigerian government has some roles to play in redirecting government spending priorities toward tackling the social risk factors like poverty, illiteracy, homelessness, unemployment, and juvenile delinquency. The public sector is also expected to provide:

- An enabling environment for the implementation of the environmental design principles through land accessibility,
- Efficient layout of both private and public lands,
- Production of the visible and flexible master plan, and
- The need for the government and its agencies to involve in comprehensive urban renewal in order to correct the wrongs in the existing residential estates

Furthermore, there is a need to establish a department of crime prevention for proper monitoring and efficient collaboration between law enforcement agencies, researchers, and government (Armitage & Pascoe, 2016; Cozens & Melenhorst, 2014; Rogers & Power, 2020; The John Howard Society of Alberta, 1995; Alabi et al., 2021). It is being done in the countries where the concept has recorded significant results like the US, UK, the Netherlands, Australia, Canada, and others,

Essentially, as discovered through the literature review, there must be a concentration of research on this aspect; as already highlighted, there is a dearth of research in this regard, especially in developing countries like Nigeria. This might have contributed to the reason why the concepts of the model are yet to be fully seen to be implemented.

This research is expected to contribute enormously to the body of knowledge and professional circle. First and foremost, housing sustainability is achievable through the product of this research in that a decline or eradication of residential neighbourhood crime would add to the value of the environment, residents, and government activities. Reducing neighbourhood crime can upturn the workforce's general productivity, translating to an increase in the gross domestic product, reducing government expenditure on procuring more police, building more prisons and courts, and increasing government revenue from property taxes. More importantly, this research would contribute significantly to real estate practice by improving housing values and enhancing professionalism. The research would also alleviate the fear of crime which hitherto had led to poor health and sudden death, thereby prolonging the lives of residents. The research is seen to be a good ground for further research.

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