



**SCHOOL OF ENVIRONMENTAL TECHNOLOGY,
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA, NIGER STATE, NIGERIA**

EDITORS IN CHIEF

R. E. Olagunju

B. J. Olawuyi

E. B. Ogunbode

**SETIC
2020
INTERNATIONAL
CONFERENCE**

BOOK OF PROCEEDINGS

MAIN THEME:

Sustainable Housing And Land Management



3RD -5TH MAY, 2021



**SCHOOL OF ENVIRONMENTAL TECHNOLOGY COMPLEX,
FUT, MINNA, NIGER STATE, NIGERIA**

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Vice-Chancellor:
Federal University of Technology Minna, Nigeria

Host:

Prof: R.E. Olagunju mnia
Dean, School of Environmental Technology
Federal University of Technology Minna, Nigeria

**School of Environmental
Technology International
Conference
(SETIC 2020)**

3RD – 5TH MAY, 2021

**Federal University of Technology Minna, Niger
State, Nigeria**

CONFERENCE PROCEEDINGS

EDITORS IN CHIEF

R. E. Olagunju

B. J. Olawuyi

E. B. Ogunbode

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“Sustainable Housing and Land Management”

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PREFACE

The School of Environmental Technology International Conference (SETIC 2020) is organised by School of Environmental Technology, Federal University of Technology Minna, Nigeria. In collaboration with Massey University New Zealand, Department of Civil Engineering Faculty of Civil Engineering and Built Environment Universiti Tun Hussein Onn Malaysia, Malaysia Centre For Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE) UTM-KL Malaysia, Global Academia, Department of Architecture, Faculty of Engineering and Architecture, Istanbul Gelisim University Istanbul Turkey, Sustainable Environmental and Technology (SET) Research Group, Department of Architecture, Universiti Sains Islam.

The main theme for this year conference is “SUSTAINABLE HOUSING AND LAND MANAGEMENT”. This promotes and encourage innovative and novelty for policy issues for inclusive and sustainable housing; access to finance for housing and land development; sustainable building materials; building cost management; sustainable and resilient cities; geoinformatics for land management; rapid urbanization; sustainable land use and spatial planning and gender issues in access to land.

The responses from participants for this conference are overwhelming, well attended, and successful. The operation mode was virtual for all participants who choose the oral presentation mode and physical for all poster medium presenters. Our participants are from various Universities and other sector across the globe, from countries like United State of America (USA), Turkey, Malaysia, China, Saudi Arabia, Kenya, New Zealand and South Africa just to mention a few. Hence, this conference provides a good platform for professionals, academicians and researchers to widen their knowledge and approach on latest advances in research and innovation. Papers presented in this conference cover a wide spectrum of science, engineering and social sciences.

Finally, a note of thanks must go to SETIC 2020 Local Organizing Committee (LOC) for their remarkable dedication in making this conference a success. We hope the event will prove to be an inspiring experience to all committee members and participants.

ACKNOWLEDGEMENTS

The effort put together in achieving the success of SETIC 2020 is predicated on the feat of the first and second edition of School of Environmental Technology International Conference held in 2016 and 2018, respectively. The support and goodwill from Vice-Chancellor of Federal University of Technology, Dean School of Environmental Technology, Dr Dodo Y. A., Dr Moveh S. and many other highly motivated people are highly appreciated.

It is also my privilege and honour to welcome you all, on behalf of the Local Organizing Committee (LOC) to the 3rd edition of the Biennial School of Environmental International Conference (SETIC 2020). This Conference which was earlier schedule for 7th to 11 April, 2020 is holding now (3rd to 5th May, 2021) due to the challenges of COVID-19 Pandemic and the ASUU-FGN crisis which made our public Universities in Nigeria to be closed for about one year. We thank God for keeping us alive to witness the great SETIC2020 event, in an improved form exploiting the new-normal situation posed by the Pandemic for a hybrid (i.e. both physical and virtual) form of Conference participation.

The conference provides an international forum for researchers and professionals in the built environment and allied professions to address fundamental problems, challenges and prospects Sustainable Housing and Land Management. The conference is a platform where recognized best practices, theories and concepts are shared and discussed amongst academics, practitioners and researchers. This 2020 edition of SETIC has listed in the program a Round Table Talk on Housing Affordability beyond COVID-19 with selected Speakers from across the globe available to do justice on the topic of discussion.

Distinguished Conference participants, permit me to warmly welcome our Keynote and Guest Speakers:

- Prof. Ts. Dr. Mohd Hamdan Bin Ahmad, *Deputy Vice Chancellor (Development) Universiti Technology Malaysia (UTM)*;
- Assoc. Prof. Dr. James O.B. Rotimi, *Academic Dean Construction, School of Built Environment, College of Sciences, Massey University of New Zealand*;
- Assoc. Prof. Sr. Dr. Sarajul Fikri Mohammed, *General Manager, Centre for Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE), UTM-KL*.
- Prof. Ts. Dr. Zanail Abidin Akasah, *Visiting Professor on Sustainable Solar Integrated Design Building Design, International Micro Emission University (IMEU)/HIMIN Ltd. China & Senior Research Fellow, The Architects Resourcery, Jos, Nigeria*;
- Ar. Dr. Elina Mohd Husini, *Department of Architecture, Faculty of Engineering & Built Environment, Universiti Sains Islam*;
- Asst. Prof. Dr. Yakubu Aminu Dodo, *Department of Architecture, Faculty of Engineering and Architecture Istanbul Gelisim University, Istanbul Turkey*

and the five Speakers for our Round Table Talk on “Housing Affordability beyond COVID-19”

- Dr. Muhammad Mustapha Gambo, *Manager, Policy, Research and Partnerships, Shelter Afrique, Nairobi, Kenya*;

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- Prof. Dr. Soumia Mounir, *Department of Architecture Ecole Nationale d'Architecture d'Agadir [The National School of Architecture of Agadir], Morocco*
- Dr. Said Alkali Kori, *General Manager, Projects and Portfolio management, Family Homes Fund, Federal Ministry of Finance, Abuja;*
- Ts. Dr. Sasitharan Nagapan, *Department of Civil Engineering, Faculty of Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia, Malaysia;*
- Dr. Mercy Nguavese Shenge, *AIA Assoc. Historic District Commissioner, City of Rockville, MD, USA.*

for accepting to share from their knowledge, wealth of experience and be available to interact with participants on varied issues on “**Sustaining Housing and Land Management**”.

As reflected on the Conference program, the Conference activities will be Virtual for power point presenters to run in four parallel sessions on the Zoon platform while the participants for Poster presentations (mostly Postgraduate students) are expected to have their Posters displayed in the Environmental Complex Building of the Federal University of Technology, Minna. With a total of One Hundred and One (101) articles captured in the Conference Proceedings covering the seven subthemes of the Conference, I have no doubt that we are all in for an impactful experience at SETIC2020 as we brainstorm, exchange ideas, share knowledge and participate in evolving more approach to sustainable housing and land management drives.

I implore us all to enjoy every moment of the deliberations and ensure we maximize the great opportunity offered by the Conference to network for better research and career development as we also make new friends.

I also on behalf of myself and the LOC express our appreciation to the Dean, School of Environmental Technology and the entire Staff of the School for giving us the opportunity to steer the ship for SETIC2020. To the Reviewers and various Committees that served with us, I say thank you for helping us through despite the pressure of work.

Thanks, and God bless you all.

Olawuyi, B.J. (PhD)
Chairman, LOC
SETIC2020

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DECLARATION

PEER REVIEW AND SCIENTIFIC PUBLISHING POLICY STATEMENT

3rd May 2021

TO WHOM IT MAY CONCERN

I wish to state that all the papers published in SETIC2020 Conference Proceedings have passed through the peer review process which involved an initial review of abstracts, blind review of full papers by minimum of two referees, forwarding of reviewers' comments to authors, submission of revised papers by authors and subsequent evaluation of submitted papers by the Scientific Committee to determine content quality.

It is the policy of the School of Environmental Technology International Conference (SETIC) that for papers to be accepted for inclusion in the conference proceedings it must have undergone the blind review process and passed the academic integrity test. All papers are only published based on the recommendation of the Reviewers and the Scientific Committee of SETIC

Babatunde James OLAWUYI
Chairman SETIC2020
Federal University of Technology, Minna, Nigeria

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AND ALSO SELECTED PAPERS WILL BE PUBLISHED IN REPUTABLE JOURNALS



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Prof. Abdullahi Bala
Vice-Chancellor,
Federal University of Technology Minna, Nigeria

HOST

Prof. Olagunju Remi Ebenezer
Dean
School of Environmental Technology,
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Prof. Kemiki O.	Building Cost Management
Prof. (Mrs) Zubairu S. N.	Gender Issues in Access to Land
Prof. Nuhu M. B.	Access to Finance for Housing and Land Development
Prof. Ajayi M.T.A	Policy Issues for Inclusive and Sustainable Housing
Prof. Sanusi Y.A	Rapid Urbanization, Sustainable Land Use and Spatial Planning
Prof. Jimoh R.A.	Sustainable Building Material

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ACKNOWLEDGEMENT TO KEYNOTE SPEAKERS AND GUEST SPEAKERS

SETIC 2020 organisers wishes to thank our keynote speakers, and Guest speakers for accepting to create time to share from their rich wealth of knowledge and interact with delegates and participants on varied issues being examined at this year's conference. A brief profile of each keynote speaker is provided here, this would allow for future interaction and networking with them.



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ROUND TABLE PANEL SPEAKERS



Round Table Talk
On Housing Affordability Beyond Covid-19

Main Theme

SUSTAINABLE HOUSING AND LAND MANAGEMENT

Dr. Muhammad Mustapha Gambo
Manager: Policy, Research and Partnerships,
Shelter Afrique, Nairobi, Kenya.

Prof. Dr. Soumia Mounir
Department of Architecture Ecole Nationale
d'Architecture d'Agadir [The National School of
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Dr. Said Alkali Kori
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An Analysis of the Relationship between Neighbourhood Ties and Crime Perception in Minna, Niger State

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Abstract

Studies have shown that neighbourhood ties are significant in crime reduction, the lack of neighbourhood ties limits the capacity of neighbourhoods to regulate and control behaviour which contributes to higher rates of crime. Prevention of crime has taken a significant part of our lives, as many people in our urban centres and cities today worry about crime, ensuring doors are locked when leaving the house, installing CCTV and security alarm or avoiding a high crime neighbourhood. This study therefore assesses the relationship between neighbourhood ties and resident's perception of crime in Minna. The study employed quantitative approach using structured questionnaire. Total of 420 residences were randomly sampled from eight (8) neighbourhoods in Minna. Spearman correlation analysis was used to examine the relationship between neighbourhood ties and resident's perception of crime. The study found that there is a moderate negative significant relationship between neighbourhood ties and resident's perception of crime in Minna ($\rho = -.399, p < .01$). This implies that the higher the level of neighbourhood ties the lower the resident's perception of crime in Minna. More importantly, the study however found that neighbourhood ties had different effect in different types of neighbourhoods in Minna. Specifically, neighbourhood ties significantly and negatively had relationship on resident's perception of crime in high density neighbourhoods, while it had no significant relationship on resident's perception of crime in medium and low-density neighbourhoods. The study findings suggest that strengthening of neighbourhood ties among residents will go a long way in controlling residential neighbourhood crime as much as possible. This study serves as call to urban planner and government agencies towards achieving sustainable neighbourhood's development.

Keywords: Neighbourhood ties, Crime prevention, Sustainable Neighbourhood.

INTRODUCTION

In every five years, 60% of the cities inhabitants has been victims of one form of crime or the other and over half of these crimes occurred in our neighbourhoods (Emmanuel & Lizam, 2015). According to Alapata (2012) the concentration of crimes in major urban centres has been an indicator of breakdown of our urban systems. Every city needs its own strategy or approach to tackle the menace. Therefore, there is a need for every individual city to establish a unique and effective framework to prevent neighbourhood crime (Alapata, 2012). Numerous research has been carried out on crime prevention though environmental design (CPTED) has shown that the higher level of neighbourhood maintenance and structural design measures has contributed to the prevention of crime in neighbourhoods, but the role of neighbourhood social aspect (neighbourhood ties) on crime prevention has been less researched (Johnston *et al.*, 2005).

Neighbourhood ties have long been concerned as the ability to control and reduce crime. The inability of neighbourhoods to develop strong ties is a key predictor of high level of crime (Wickes *et al.*, 2017). It is well established that crime is concentrated in neighbourhoods that are socially lacking (Faust & Tita, 2019). Neighbourhood ties thrived in societies where there is a common goal and a mutual sense of belonging. Such sense of belonging and common vision has been shown to help reduce the likelihood of crime in an urban settings regardless of socio-economic status, lifestyle and neighbourhood characteristics (Olutola, 2016). When residents feel connected to each other, they work together to resolve local problems, leading to lower rates of crime (Wickes *et al.*, 2019).

Concept of Neighbourhood Ties

Neighbourhood ties is an evolving concept, that is subject to multiple meanings (Holdsworth & Hartman, 2009). The concept of neighbourhood ties is viewed as a characteristic of society dealing with the connections and relations between societal units such as individuals, groups and associations as well as territorial units. The sociologist Emile Durkheim, was the first to use the concept. He considered it as an ordering feature of a society and defined it as the interdependence and solidarity between members of a society (Berger-Schmitt, 2000).

As noted by the Australian Bureau of Statistics (2004) neighbourhood ties refer to the social and community commitments that bind people together. Council of Europe (2008), defined neighbourhood ties as the capacity of a society to ensure the well-being of all its members, minimizing disparities and avoiding marginalization. The broad definition of neighbourhood ties set out by the United Kingdom Local Government Association (UK LGA, 2002), is one that promotes common vision and a sense of belonging, appreciation of diversity of backgrounds and circumstances, similar life opportunities for all people not dependent on background, community where strong relationships can be developed between people from diverse backgrounds.

The definitions have brought to fore some challenges that have thrown up a number of conceptualizations or adoption of neighbourhood ties as contributory unified factors to society. These generally include features that are related to individual behaviours and social attitudes, which comprise of established characteristics of communities that are known to be obligatory for cohesive society (Mekoa & Busari, 2018). The societal attitudes and behaviours that are commonly invoked include, having a sense of belonging that translates or give semblance of common identity (these includes national identity, absence of impunity, respect for the rule of law and inclusiveness); ability to tolerance and respect individual's feelings and opinions, tribes, race, culture, religions and avoidance of culture of impunity in the system, Presence of mutual trust and confidence in other individuals that could booster inter-personal and institutional trust, having a somewhat civic co-operation, provision of good governance and eradication of corruption, an active participation in matters of national interest and respect for the constitution by abiding and respecting law (so as to ensure a significantly low or absence of crime in the society).

METHODOLOGY

The Study Area

Minna is a metropolitan settlement and the administrative capital of Niger State, lies within latitude 9°24'N and 9°48' North and longitude 6°25'E and 6°45' East. It is about 120km away from the Federal Capital Territory, Abuja through the F126 Minna-Suleja road. Minna is with a population of 317, 465 according to the 2006 census (National Population Commission, 2006). The land mass size is about 6,784 square kilometres encompassing of residential neighbourhoods and political wards (Kawu, 2016). Minna has twenty six (26) neighbourhoods (Badiora *et al.*, 2017) that were identified on the basis of population density, environmental qualities and other socio-economic attributes (Kawu, 2016). Minna neighbourhoods are classified into three densities (low, medium and high). Figure 1 shows Minna and neighbourhoods.

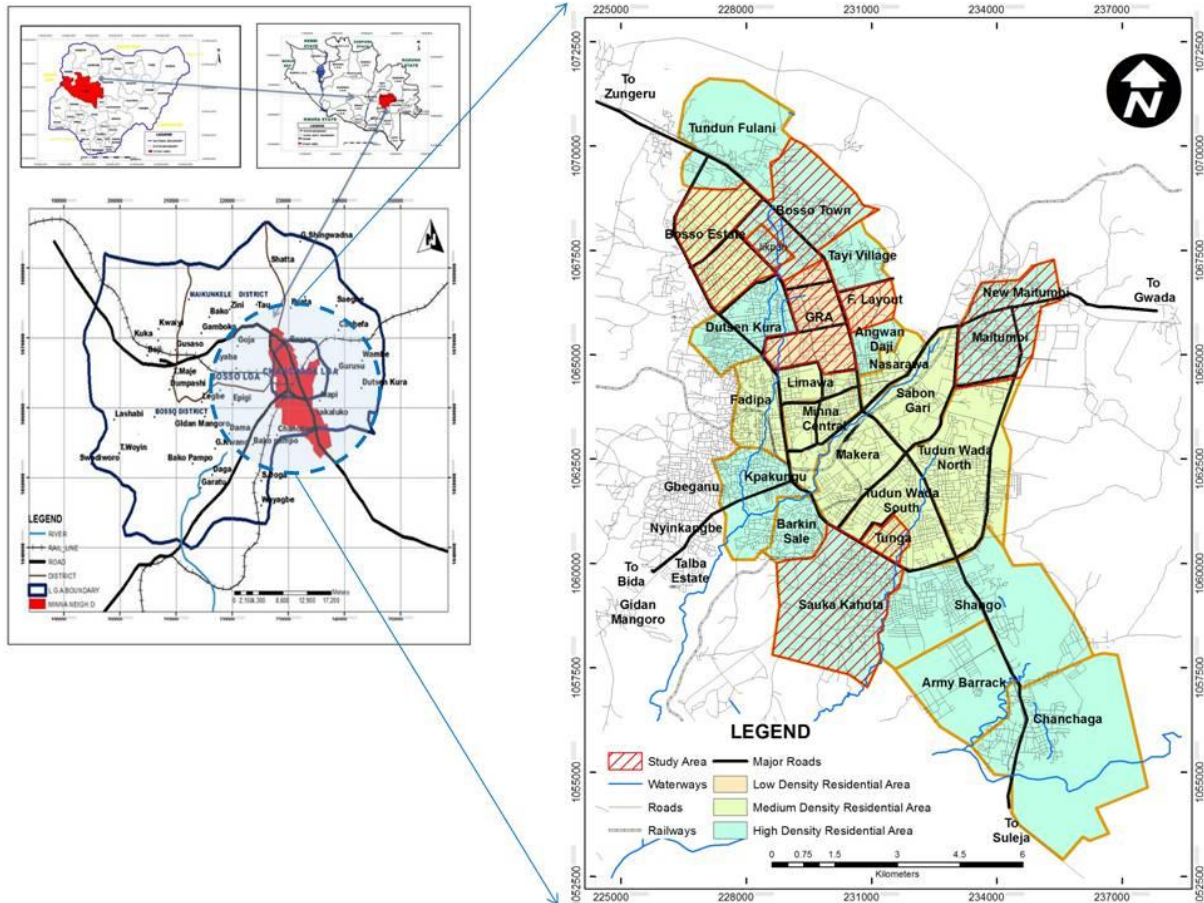


Figure 1: Minna the Study Area

Source: Author, 2020

Data Collection

This study relied on primary data which involves a structured questionnaire that was used to obtain data from residences in selected neighbourhoods using a cross-sectional survey. Population of the study (n = 420) were collected from residents of 8 selected neighbourhoods using stratified random sampling out of twenty-six (26) neighbourhoods in Minna based on densities (Low, Medium and High). The selected neighbourhoods include Bosso Town, Jikpan, Maitumbi (High densities), Sauka Kahuta, Tunga and Bosso Estate (Medium densities), F-Layout and GRA (Low densities).

Table 1: Distribution of Sample Size (n)

S/N	Neighbourhoods		Estimated Household size	Sample size (n)
	Name	Density		
1	Bosso Town	High	11,360	208
2	SaukaKahuta	High	1,107	20
3	Maitumbi	High	4,604	84
4	Tunga	Medium	1,682	31
5	Jikpan	Medium	151	3
6	Bosso Estate	medium	1,682	31
7	F-Layout	Low	1,711	31
8	GRA	Low	667	12
Total			22,964	420

Source: Author, 2020.

Measures

A total of twenty-seven (27) indicators identified from literatures were used in assessing neighbourhood ties and were derived from sense of belonging, community engagement, neighbourliness, socio-economic attribute and access to facilities/services (Table 2). The categorical response for each item ranged from 1 (strongly disagree) to 7 (Strongly agree). Data on resident's perception of crime, respondents were asked to rate the occurrence of crime in their neighbourhoods.

Table 2: Indicator Used in Assessing Neighbourhood Ties

Indicators
Sense of Community
1. I look after my neighbour's children/properties when they are not around.
2. I value my neighbour/people view/comments in this neighbourhood.
3. When there are problems in this neighbourhood they are solved by the people.
4. I am happy living among people in this neighbourhood.
5. People in this neighbourhood always share important events such as birthday parties, weddings, and festivals.
6. People in this neighbourhood care about each other.
7. I really feel that I am part of this neighbourhood.
8. I can trust the people in this neighbourhood.
9. I feel this neighbourhood is good to live in.
Sense of Belonging
10. I can identify most of the people in this neighbourhood.
11. Most of the people in this neighbourhood knows me.
12. I always participate in activities in this neighbourhood.
Community Engagement
13. I belong to a group/clubs in this neighbourhood.
14. I attend events in this neighbourhood.
15. I do voluntary work in this neighbourhood.
Neighbourliness
16. I interact with my neighbours.
17. I visit my neighbours.
18. I offer support/help to my neighbours.
Socio-Economic Attribute
19. Age limit.
20. Marital status.
21. Educational qualification.
22. Type of occupation.
23. Income status.
24. Length of stay in the neighbourhood.
Access to Facilities/ Services
25. This neighbourhood is planned and well layout.
26. There are available facilities/services in this neighbourhood.
27. I use these facilities/services in this neighbourhood.

Source: Author, 2020

Data Analysis

Spearman correlation is a non parametric test that is used to measure the degree of relationship between two variables. Spearman correlation analysis with two tailed test of significance was conducted using SPSS version 24.0. Spearman coefficient (rho) technique was used to determine the strength and direction (negative or positive) that was met between

neighbourhood ties and resident’s perception of crime. The most accepted view about Spearman coefficient is when $\rho = 0.10$ to 0.29 as small, that is, it accounts for 1% of the total variance, $\rho = 0.30$ to 0.49 as moderate, accounts for 9% of the total variance and $\rho = 0.50$ and above as large, accounts for 25% of the variance (Field, 2006).

RESULTS AND DISCUSSION

Relationship between Neighbourhood Ties and Residents Perception of Crime in Minna

Table 3 presents the result of the spearman correlation analysis. It reveals that there is a negative and significant relationship between neighbourhood ties and resident’s perception of crime in Minna ($\rho = -.399$, $p = .000$) indicating a moderate relationship. The implication of this relationship is that the higher the neighbourhood ties, the less the resident’s perception of crime in Minna.

However, correlation on each neighbourhood density (high, medium and low) was calculated separately. The table show there is only significant relationship between neighbourhood ties and resident’s perception of crime in the high density neighbourhood of Minna ($\rho = -.459$, $p = .000$). This could be due to different levels of neighbourhood ties and resident’s perception of crime in the neighbourhoods.

Table 3: Correlation between Neighbourhood Ties and Resident’s Perception of Crime in Minna

	Minna	Neighbourhood Density		
		High	Medium	Low
Correlation Coefficient	-.399**	-.459**	.221	-.061
Sig. (2-tailed)	.000	.000	.077	.699
N	420	312	65	43

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Author analysis, 2020

CONCLUSION

This study is a contribution to the concept of sustainable development. Presently, the concept of sustainable development is likely the most well-known and generally used theoretical framework for assessing the living condition in a society. A socially sustainable neighbourhood includes element of social ties, safety and security among. Therefore, social sustainability in this study is the quality of being in a place (neighbourhood) that is capable of providing and maintaining neighbourhood ties and safety. The findings recommended that significant programs aimed at promoting sustainable neighbourhood development should consider strengthening neighbourhood ties among residents to lead to crime free residential neighbourhood. Although the study offers several contributions, however, further study is needed to establish the association between neighbourhood ties, resident’s neighbourhood satisfaction and neighbourhood crime in Minna.

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