Impact of Entrepreneurial Opportunity, Entrepreneurial Necessity and Demographic on Entrepreneurial Participation: Towards Peace Restoration in Northeast Nigeria

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ABSTRACT

The role of entrepreneurship in creating social values beyond profit-motive has been widely explored and its potential towards peace restoration in post-conflict has recently gained attention in many countries that experienced armed violent. This, for instance, is among the strategies employed by the authorities for economic recovery in the Northeast Nigeria authorities where insurgency ravaged. However, empirical investigation confirming such approach may be important for evidence-informed practice. This study examines the impact of entrepreneurial opportunity necessity and demographic on participation in entrepreneurship towards peace restoration in the region. The study utilizes primary data collected from 3,768 respondents across nine major markets in the Borno, Adamawa, and Yobe states, with 3,526 valid responses used for analysis (93.6% response rate). Structural Equation Modelling (SEM) was applied for the analysis. The findings revealed that entrepreneurship has a positive and statistically significant effect on peace restoration, though the magnitude of direct effect is relatively weak. The SEM results further show that entrepreneurial necessity, entrepreneurial opportunity, and demographic characteristics significantly influence entrepreneurial participation, with demographic factors exerting the highest direct effect (0.734). The study recommends integrated interventions combining entrepreneurship development, peacebuilding, psychosocial support, anti-indoctrination strategies, and institutional strengthening to achieve sustainable recovery and balance.

Keywords: Entrepreneurship, Peace Restoration, Insurgency, Structural Equation Model, Northeastern Nigeria.

INTRODUCTION

Entrepreneurship potential towards economic development has been established in the literature particularly its impact on income generation (Omotayo et al., 2024), poverty reduction (Colovic and Mahreho, 2020), and employment creation (Chandra, 2017). However, its potential towards peace restoration in post-conflict has recently gained attention in many countries that experienced armed violent. It has been a strategic as post-conflict measure for reviving economic condition of the affected communities as commonly being used in crisis ridden regions, for instance, in Middle East, Asian, and African countries, including Nigeria.

In Nigeria, terror attacks perpetrated by Boko Haram over a decade inflicted economic hardship in the entire northeast states of Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe, with the BAY states (Borno, Adamawa, and Yobe) being the most hit. In these places over this period, with the persistence of violence, displacement of people and economic instability, primarily due to Boko Haram insurgency, many entrepreneurial activities were destroyed and over 2 million people were documented to have been displaced and economic activities in the region have declined by as much as 50%. (UNDP, 2023). According to available reports, the GDP losses in BAY states from 2011 – 2015 stood at $6.21 billion (Borno - $3.54 billion; Adamawa - $1.54 billion; Yobe - $1.10 billion). The conflict in the region has disrupted economic activities productive assets, economic resources were destroyed and many entrepreneurial activities were either fully or partially closed or relocated, thereby

substantially reducing the region's level of investment and suppressing its level of market activity. With signal of normalcy in these states, the governments at all levels, with support of non-governmental organizations, embarked on entrepreneurial development through entrepreneurial training of Internally Displaced Persons (IDPs) and returnees at various vocational training centers across the states to learn a trade and to be economically independent and as a means of stimulating livelihood for survival. This is believed to revive enterprises in the region by inspiring people to engage in small enterprises for economic self-reliant (UNDP, 2016) with the aim not only essential for rebuilding and sustaining local economies, but also for restoration of peace.

Despite increasing attention on the impact entrepreneurship on peace restoration in conflicted-affected area little is known about the extent this approach could build peace in Northeastern Nigeria as such approach may be important for evidence-informed practice. The role of entrepreneurship on economic development was highlighted in some studies (Ikpe, 2017; Bello et al., 2018; Adewuyi and Michael, 2020); while some studies (Chukwu et al., 2022; Abubakar et al., 2023; Abubakar and Amurtiya, 2023) focused on its impact on security implications. However, the question on how entrepreneurial opportunity, entrepreneurial necessity and demographic influence participation in entrepreneurship towards peace restoration in Northeast Nigeria still remains unanswered. The key concept that leaves entrepreneurial-peace relationship unexplored. Thus, this study examines the impact of entrepreneurial opportunity, necessity, and demographic on participation in entrepreneurship towards peace restoration in the region. We hypothesize that engagement in entrepreneurial participation through opportunity for social value and necessity for survival may influence emancipation from the ideological bonds of terrorism, reduce grievances, and develop empathy towards others which may in turn be an instrument for peace restoration.

This study sheds more light on the quest to understand the important role entrepreneurial development plays in restoration of peace, a crucial focus by authorities and international bodies, in conflict-affected communities of the Northeast part of Nigeria. It also reveals entrepreneurial potential on social value and welfare creation for achieving social development beyond its predominantly 'for-profit' or pro-poor contexts. This helps to understand the extent to which entrepreneurial promotion could restore entrepreneurial work-life balance in post conflict society. It also links theory and data and offers recommendations that may help enhance sustainability of entrepreneurial ventures and the quality of life in conflict-affected or post-conflict environments, and policymakers to tailor their policies accordingly. The remaining parts of the paper are structured as follows. Section 2 presents literature review, Section 3 describes methodology and data. Section 4 presents and discusses the results. While section 5 provides the conclusion.

LITERATURE REVIEW

Peace is essential for investments and supporting entrepreneurial activities. Lekić et al. (2021) investigate the relationship between sustainable entrepreneurship, economic development, and peace across European countries. It specifically examines weather entrepreneurial activities that balance economic, social and environmental goals contribute positively to peace societies. The study is motivated by the increasing global focus on sustainable development goals (SDGS) particularly SDG 16 (Peace, Justice, and Strong Institutions) and the hypothesized role of entrepreneurship in achieving these goals and it seeks to provide empirical evidence for both often theorized link between sustainable business practices and societal peace. The study utilizes panel data for a sample of European countries over a period time (prior to 2021) and employs quantitative panel regression. Key variables include indicators of sustainable entrepreneurship metrics related to social/environmental business activities; economic development (e.g. GDP per capital); and peace (Using GPI) were modelled. The study found a statistically significant positive relationship between sustainable entrepreneurship and peace (as measured by the GPI). It suggests that countries with higher levels of sustainable entrepreneurship tend to be more peaceful. Economic development was also positively correlated with peace. Economic development was also correlated with peace. The findings align well with theoretical frameworks suggesting that inclusive and sustainable economic activities can reduce social tensions, address inequalities, and promote environmental stewardship, all of which are factors contributing to peace. In reality, businesses that actively engage with community needs and environmental limits may indeed foster greater social stability. The study provides strong correlational evidences supporting the positive role of this type of entrepreneurship.

The post-conflict peace theory has been a general model in the literature that focused on conflict-peace studies, a few examples of which are Collier, Hoeffler and Söderbom (2008); Collier and Hoeffler (2004, Boudreaux (2007), Burnside and Dollar (2000). The theory states that re-establishing peace, economic recovery, a rule of law and political stability are key goals of post-conflict. Collier and Hoeffler (2008) theorized that trivial economic activities might play a crucial role in economic recovery in post-conflict situation. In Boudreaux (2007) model, economic interaction is seen to have a significant cost-effective alternative to peace restoration, reconciliation and mechanism for healing in Rwanda post-conflict stage. In view of the fact that entrepreneurship may have potential to restore peace in conflict affected society other than exploitation (planned behaviour) and wealth creation (social cognitive), we employed emancipatory framework to conceptualize the link between entrepreneurship and peace restoration. According to International Peace Institute (IPI) report (2017) stated that entrepreneurship can contribute to restoration and sustaining peace and peacebuilding process as it can serve as an important pathway for rehabilitation and rebuilding work-life of a society that had experienced conflict. McMullen (2015) and Shepherd and Williams (2018) postulated that entrepreneurship has connection with quality of life and the opportunity to alleviate suffering in the aftermath of a disaster.

Gebrihet (2025) To examine how armed conflict exacerbates household food insecurity in rural Tigray, Ethiopia, by analyzing its impacts and exploring coping strategies employed by affected households. Driven by the urgent need to understand and address the severe food insecurity crisis in rural Tigray, where armed conflict (since November 2020) has reversed development progress and caused widespread hunger, necessitating context-specific rural data. Cross-sectional survey data collected in May-June 2024. Utilized Food Insecurity Access Scale (FIAS), Food Insecurity Experience Scale (FIES), and Local Coping Strategy Index (LCSI). Employed descriptive statistics and binary logistic regression analysis. Found 57% of surveyed households experienced food insecurity (21.86% severe). Conflict-induced displacement, destruction of agricultural assets (crops, livestock), and market disintegration were primary drivers. Resilience was linked to irrigation access, diversified income, and livestock ownership. Social safety nets (like PSNP) and aid mitigated some impacts, but households relied heavily on coping strategies (e.g., selling assets, reducing meals, migration, withdrawing children from school) that compromise long-term livelihood stability.

Oyekale (2024) assesses the effect of farmer-herder conflicts on the income generation of crop farmers in Oyo State, Nigeria, the study was motivated by the increasing farmer-herder conflicts in the region leading to violence, displacement, disruption of farming activities, and threats to livelihoods and food security. The study aimed to provide empirical evidence on the conflict's economic consequences for farmers. The study used survey method to collect data from crop farmers and compared annual income before used (using recall method for 5 years prior) and after the conflict's escalation (around 2021) using t-tests and the data were analysed using regression analysis and they report that farmer-herder conflicts resulted in lack of access to farmland, destruction of crops/farmland, and reduced output. Béné (2024) analyse the resilience strategies adopted by local food system actors (e.g., farmers, traders) facing violent conflict and insecurity in Yagha province, Burkina Faso. This is to identify factors explaining variations in their capacity to resist and adapt to shocks. The study was motivated by recurrent violent attacks and high levels of insecurity and worsening livelihood activities using primary data collected from food system actors which was analysed with econometric models and the study reports that local food system actors significantly reduced their economic activity (by about 50%) due to the conflict. Actors exposed to more frequent violence were more likely to adopt strategies detrimental to their businesses (e.g., reducing activity). Having broader social networks helped actors to better mitigate the negative impacts of the armed conflict on their economic activities.

World Bank (2023) assesses the impacts of the Ethiopian civil war on the food security and livelihood activities of affected households in Ethiopia, thus is to offer novel evidence on the near-real-time welfare impacts of an ongoing civil of study conflict, demonstrating how violence disrupts market supply chains and household economic activities. The data were collected using High-Frequency Phone Survey (HFPS) for several months before and after the war's outbreak and it was found that the conflict significantly curtailed non-farm and wage-related livelihood activities and disrupted access to food via supply chain problems. This signifies that conflict really destroys economic foundations, reverses development, and traps populations in cycles of poverty and food insecurity, making sustainable livelihood recovery intrinsically linked to peacebuilding and stability. Armed conflict constitutes a severe exogenous shock with profound and predominantly negative consequences for the

livelihood activities of affected populations. From an economic perspective, livelihoods encompass the assets (including human, natural, physical, financial, and social capital), activities (such as farming, wage employment, trade, remittances), and access (to markets, services, resources) that individuals and households utilize to make a living. Standard economic data analysis consistently demonstrates that conflict systematically disrupts and degrades these elements, undermining household welfare, reversing development gains, and perpetuating poverty cycles.

Hafte (2025) examines the severity, determinants and coping mechanisms of war-induced food insecurity among rural households, employing a cross-sectional survey of 1060 households. The survey was conducted in two zones of the war-affected Tigray region and the study used the descriptive Statistics: Chi-Square was used to analyse the data and the result indicated the how food security and in effect, people's livelihood activities was affected by the conflicts. This is based on dependency ratios and uses tools such as Food Insecurity Access Scale (FIAS), Food Insecurity Experience Scale (FIES) and Food Consumption Score (FCS) to estimate the odds of increase in food insecurity owing to rise in conflicts. The study was able to establish that for every increase in dependency Ratios, FIAS and FIES increases more than one (1) indicating that rising in conflict usually results in higher increase in food insecurity and therefore declining means of livelihood for the populace. - This is also buttressed by the causative relationship between armed conflict and devastation in agriculture, education, and general economic activities in the affected areas. Although conflict affected areas are affected by food insecurity as their livelihood activities are devasted by the conflict, people have tendencies to switch and look for alternative ways to survive. Thus, usually creating another and/or additional means of survival.

Fiala, 2023 Purpose of the Study: To determine if microenterprises recover post-conflict or remain stunted in Northern Uganda (Gulu, Lira districts) using World Bank Enterprise Surveys (2010–2020) and the data were analysed using Panel data fixed-effects models. The study reports that firms in war-affected areas have 40% lower profits even a decade later. - Social capital (e.g., cooperatives) aids recovery more than state programs. Kishi (2021) examines how armed conflict (particularly Boko Haram insurgency) in the northeast affected agricultural livelihoods, focusing on crop production in Northeastern states of Nigeria (Borno, Yobe, Adamawa states). the study used both primary and secondary sources of data based on ACLED (Armed Conflict Location & Event Data), and LSMS-ISA (Living Standards Measurement Study), respectively. The study used difference-in-differences (DID) and spatial regression models. The study found that rising conflict reduces crop yields in the agricultural sectors by about 30% in high-violence areas. There might be variations depending on the intensity of the conflict. - The displacement usually leads to drive towards alternative means of survival, labor shortages in the affected areas, labour concentration in safer locations, and land abandonment. - Markets are generally disrupted and hence the entire agricultural value chain; thus, limiting access to critical inputs to the production process. The findings align with "Conflict Trap" theory, where violence perpetuates poverty cycles. The study empirically validates real-world disruptions in Nigerian agriculture especially in the affected northern Nigeria.

Justino (2020) investigates how Syrian households adapt to changing livelihoods amidst prolonged conflict between government and pressure groups/insurgents in Syria (survey covered Aleppo, Idlib, Damascus). The study uses both primary and secondary data and especially UNHCR surveys (2016–2019), and qualitative interviews with respondents in the study area. The study used logit regression combines with thematic analysis. The study found that about 60% of households switched from farming to other informal trade and had to work on a per day labour to sustain the challenging livelihood. - Following death of many men and disruption and displacement of people, Women's labour participation increased by 22%. - Remittances and localised and international aid became critical for survival of the populace. The findings support that Livelihood Adaptation Theory which states that households reallocate and adapt to changing environment by finding available means livelihood and relocating resources dynamically. However, the findings reflect Syria's grim reality but overlook psychological trauma's economic impact. Moya (2022) explores how artisanal mining becomes a coping and/or alternative means of livelihood amidst militia violence and conflict. Study Area: Eastern Democratic Republic of Congo (North Kivu, South Kivu), the study used both Primary and secondary sources of data and using ethnography and econometric risk assessment and the study reports that youth who lost and/or lack alternatives due to weakening economy and disruptions to their ideal/normal source of livelihood. It is also reports that Militias taxed miners but also provide precarious security. The fact that global demand for the mineral's fuels

conflict, but local agency matters. Study rightly humanizes miners but underplays the lurking environmental harm. Taking a different approach, the stud at hand constructs a set of composite indicators in order to measure and explore the relationships between three dimensions of entrepreneurship and peace. Within the boundaries of our conceptual framework, we explore five hypotheses as stated in the next section.

METHODOLOGY

Study Area

This study covers Adamawa, Borno and Yobe states out of the six northeast states in Nigeria. These three states have more than 400 communities in all local governments and with various markets located in the communities. Large consumer-oriented markets are concentrated in Monday market located in Maiduguri, Borno state, a largest commercial hub features not less 20,000 shops and facilities, making it one of the largest markets in northeast. Yobe state has a number of entrepreneurial markets particularly in Damaturu, Potiskum, Buniyadi and Geidam. The state has the largest livestock market, cattle in particular in Potiskum and a wealth of agriculture produce, grains, cereals, are also traded in the markets in the state, as well as dexterity services such as repairing, transport, automobile and technology information services, manicure and pedicure dressing, among others. Adamawa is one of the largest states and occupies about 36,917 square kilometers. It shared border with Borno state in the Northwest, Gombe state in the West and Taraba state in the Southwest. The state shares border with Cameroon to the East. A number of large markets (Mubi Market, Toungo market, Kojoli market Ganye market, Jimeta market) are located in Adawama state making the place to serve for large commercial hub for livestock and grains. Particularly, Jimeta market in Yola is one of the biggest markets where several entrepreneurial activities are taken place (Attah et al., 2017). The economic potential of these three states largely rely on consumer-oriented enterprises comprises small, medium and large scales with majority engaged in small and medium scales, as well as in commerce and various social services (Attah et al., 2017).

Research Design

The study adopts perspective cross-sectional design based on some ethical reasons. It is appropriate for mixed methodology research, that has ability to disentangle complex relationships, thus, providing a rich insight of the phenomenon, as applied in this study. Perspective research design integrates theory and data and establishes the convergence and/or divergence between variables (Creswell, 2009). Most importantly, it allows cross-sectional type of research design which permits specificity and generalizability of research findings makes it suitable for this study. The information on the potential of entrepreneurship for peace building was elicited from selected respondents at a point in time in Borno, Yobe and Adamawa as entails in cross-sectional type of research design. This provided an opportunity of describing the prevalent situation in these areas.

Population and Sample size

Small and medium enterprises in Adamawa, Borno and Yobe states formed the population of this study. Generally, these enterprises informal but recongnised as the markets where they operate were established by the governments in respective states. Following recovery interventions, and returns of many displaced persons owing to normalcy signaled in these states, many markets are reconstructed and various marketable skill-trainings are provided in these states for attracting people to engage in entrepreneurial opportunities. The procedure to formally determine the population frame in this scenario is difficult. Thus, unnumbered population was adopted to create a purposeful sample of participants (Patton, 2002). At least major markets were purposively selected from each state for adequate sample size. It was envisaged that insightful data can be elicited from the sample of this population as it consists entrepreneurs whose ventures were affected or suffered from the insurgence attacks or effect of the attacks. As such, this group was considered to have sufficient experience on the potential effect on peacebuilding of entrepreneurship in post-conflict.

Based on unnumbered population frame adopted in this study, a sample size of 3,768 was purposively selected from nine markets with 2,289 responses in Yobe (4 markets), 1,392 responses Borno (3 markets) and 90 responses Adamawa (2 market). Hair et al., (2011) and Hoe (2008) suggested a minimum ratio of 10 cases per free predictor, whereas Gorsuch (1997) suggested a minimum ratio of five individuals for every free measured variable, but not less than 100 individuals for any analysis. However, Guadagnoli and Velicer (1988)

demonstrated in their Monte Carlo simulation, that the most critical issue is how saturated the factors are by their measured variables. They argued that factors tend to be estimated if they are each defined by four or more measured variables with structure coefficients of each being greater than 0.6, regardless of sample size; or if the factors are each defined with 10 or more structure coefficients each being around 0.4. According to Hair et al. (2025), a sample size > 200 and ≤ 400 is considered adequate for SEM analysis that is based on maximum likelihood estimation. Generally, in SEM, the consensus is that a sample size ≥ 200 is adequate to provide enough statistical power for analysing the data (Kline, 2016; Hoe, 2008).

However, Westland (2010) argued that there is possibility that the sample size rule of 10 observations per indicator may indeed lead to bias as researcher may tend to select a smaller number of indicators per latent variable in order to minimize the cost of data collection and/or the length of the survey instrument. Thus, Westland recommended that the calculation of the minimum sample size should be based on the ratio of indicators to latent variables, which was demonstrated to be substantially better than just choosing 10 observations per indicator, and suggested a minimum sample size as follows:

$$n \geq 50r^2 - 450r + 1{,}100 \qquad 1$$

where n represents the minimum sample size, and r signifies the ratio of indicators to latent variables in a model. Thus, for simplicity the formula can be written as:

$$n \geq 50(p/k)^2 - 450(p/k) + 1{,}100 \qquad 2$$

where p and k are the number of indicators and latent variables, respectively. The ratio r = p/k of indicators to latent variables is widely used to calculate the sample size as the minimum sample size not only dependent on the ratio, r, but also depends largely on three other indicators such as level of significance, α ; standard statistical power; and the minimum effect size. Soper (2021) provides a link[1] to use statistical algorithm software for computing minimum sample size recommended by Westland (2010), and with 42 free parameters, 6 latent variables, small effect size of 0.15, a statistical power of 0.8 and a 0.05 level of significance, the result suggests a minimum sample size of 742 for our analysis. Thus, the sample size of 3,768 collected for the analyses in this study deemed adequate.

Data

The primary data was used for analysis in this study due to micro-data level needed to achieve the objectives of the study, and the variables conceptualized for the analysis are theoretical constructs in nature which cannot be directly observed but they are measured by the indicators. Thus, survey data through questionnaire instrument was used for the data collection. The questionnaire was adapted from Chandra (2017) and Ahmed (2024) and modified. It consists of subsections seek perceptions of respondents on observed indicators for entrepreneurial demographic, entrepreneurial opportunity, entrepreneurial necessity, entrepreneurial participation and entrepreneurial peacebuilding indicators measured by Likert scales. The questionnaire was written in English and then translate to Hausa by native expert. Hausa is commonly spoken local language in the northern part of Nigeria. It was noticed that Hausa version of the questionnaire permits clarity to the respondents during the pretest of the instrument, enables fluency of the enumerators who were native speakers, and the respondents found it easy to understand. The questionnaire was administered at the selected markets. The choice for chosen these markets are: they are among the largest markets in each state; and various entrepreneurial ventures are carried out in these markets.

The coherent questionnaire was assessed by the experts in the Faculty of Education and Faculty of Management for assessment and their suggestions were taken to consideration before the amended questionnaire was uploaded to Kobocollect, an online tool used for the interview. The questionnaire was pretested and improved before conducting the actual survey. The questionnaire pretested on 25 entrepreneurs who were randomly selected from New Tash Bama Market, Maiduguri, Born state. The pretest resulted in rewording and arrangement of some questions in the instrument.

[1]Available: https://www.danielsoper.com/statcalc/calculator.aspx?id=89 Calculator was assessed on 21/09/2025.

The data collection runs simultaneously in the three states and lasted for six weeks, started in July 05, 2025 to August 23, 2025. A total of 3,768 questionnaire were administered; 2,286 collected in Yobe, 1,392 collected in Borno and 90 responses were collected in Adamawa. The responses collected in Adamawa was the smallest probably owing to the number of collectors and given the time frame. Also, the fear of insurgency that still resonating in the state could have made many entrepreneurs not willingly to participate in the survey. 242 surveys were deleted for missing more than 10% of the responses (Adedeji et al., 2016), leaving a cumulative of 3,526 responses, representing 93.5%, used for the analysis. Altogether, the data were considered to be adequate for generalizability. Structural equation model (SEM) was applied for the analysis, presented in the next subsection.

Method

SEM allows handling of latent and observed variables and their relationships within an integrated framework (Jöreskog and Sörbom, 2001). It consists of two sub-models: a measurement model and a structural model. The measurement model specifies the relationship between the latent variables and their observed indicators while the structural model represents the relationships between the latent exogenous and latent endogenous variables as well as the relationships among the latent endogenous variables. Following (Adedeji et al., 2016), SEM was specified:

in the structural model was applied:

$$\eta_i = B\eta_i + \Gamma\xi_i + \varsigma_i \qquad 3$$

where

η (eta) = column vector of endogenous latent variables,

ξ (ksi) = column vector of exogenous latent variables,

B = matrix of structural coefficients denoting the direct effects of endogenous variable on other endogenous variable,

Γ = matrix of structural coefficients denoting the direct effects of exogenous variables on endogenous variables, and

ς (zeta') = column vector of structural error terms.

By convention, it is assumed that ς and ξ are uncorrelated with each other; also, ς, ε, and δ are mutually uncorrelated with each other; and, B is nonsingular matrix. Also, ξ can freely 'co-vary' and covariance matrix of ξ denoted by ϕ ('phi'). The causal relationship between the coefficient (similar to regression coefficient) between ξ and η (in the direction from ξ to η) is γ (gamma), and between two η is β (beta). The last component of SEM is structural error. This error usually added into the structural model to account for other unobserved factors not explained by the exogenous variables. In form of a matrix, equation 3.1 is written as:

$$\underbrace{\begin{bmatrix}\eta_1\\ \eta_2\end{bmatrix}}_{\eta} = \underbrace{\begin{bmatrix}0 & 0\\ \beta_{21} & 0\end{bmatrix}}_{\mathrm{B}} \times \begin{bmatrix}\eta_1\\ \eta_2\end{bmatrix} + \underbrace{\begin{bmatrix}\gamma_{1,1} & 0 & 0\\ \gamma_{2,1} & 0 & 0\\ \gamma_{3,1} & \gamma_{3,2} & 0\\ \gamma_{4,1} & \gamma_{4,2} & \gamma_{4,3}\end{bmatrix}}_{\Gamma} \times \underbrace{\begin{bmatrix}\xi_1\\ \xi_2\\ \xi_3\\ \xi_4\end{bmatrix}}_{\xi} + \underbrace{\begin{bmatrix}\varsigma_1\\ \varsigma_2\end{bmatrix}}_{\varsigma} \qquad 4$$

However, the error terms are fixed to zero, since the latent variables have a directional relationship with their respective observed variables. The variables involved in the model and the paths developed for this study follows reflective model of which the influence among the variables are specified in the model and unidirectional influence is drawn from the constructs to the indicators. The strength of reflective model, over formative, lies in its tolerability to not change initial latent construct variable if any of indicators measure the construct is interchanged or dropped (Hair et al., 2017). SEM bridges the gap between theory and empirics, and it reduces attenuation in the structural model because the explanatory variables in the measurement models have their measurement errors equal zero; and it reduces the problem of multicollinearity (Folmer et al., 2010).

The following observations apply. First, in equation (4) the latent variables are unobservable and, thus, they measured with observed indicators of which indicator is fixed at 1 for each latent variable in the equation. Second, the latent variables are formatively measured by their observed indicators. Consequently, the structural error terms are fixed at 0, since the latent variables have direct relationships with their corresponding observed variables.

The key concept behind this specification is to analyze the influence of entrepreneurship defined as entrepreneurial opportunity (ENT_OPPO), entrepreneurial necessity (ENT_NECE), entrepreneurial participation (ENT_PART), entrepreneurial demographic on peace restoration in conflict-affected area. The entrepreneurial opportunity aspect is the opportunity sported and/or entrepreneurial skill formally of informally acquired that prompt individual to participation in the market. The entrepreneurial necessity aspect rooted from necessity theory which states that people often engage in businesses for the need to survive, fight unemployment, curb poverty, or idleness (Rosa et al., 2020). Accordingly, this theory spurs the idea that people in conflict-ravaged area are tend to engage entrepreneurial activities for survival to improve their livelihoods, this weakens fundamentalist ideology and indoctrination to violence (Chandra, 2017; Muluk et al., 2013). Entrepreneurial participation is process (intention) of market risks taking, innovation, value creation by means of commercial and market-based activities, ability to successfully address persistent economic and offer viable solution to social problems (Sardana et. al., 2019; Hockerts, 2017). These core elements explained by theory of entrepreneurial behaviour. entrepreneurial demographic is included in the model for given that entrepreneurial demographic factors (age, education, experience, access to finance, non-financial support) predict entrepreneurial intention and motivate decision of engaging in entrepreneurship (Sarmin and Ashrafuzzaman, 2017), and this may spur peace (Chandra, 2017) We specifically target entrepreneurial individuals believed to have intensive knowledge about enterprising and had experienced the effect of conflict. This addresses the limitations of other studies. By identifying such respondents, we expect our results to be more robust compared to earlier findings. Relying on the opportunity and necessity theory and theory of entrepreneurial behaviour, we propose the following hypotheses and then test them empirically:

H1. entrepreneurial necessity has a positive and significant direct effect on entrepreneurial participation.

H2. entrepreneurial opportunity has a positive and significant direct effect on entrepreneurial participation.

H3. entrepreneurial demographics has a positive and significant direct effect on entrepreneurial participation.

H4. entrepreneurial participation has a positive and significant direct effect on peace restoration.

H5. entrepreneurial demographics has a positive and significant direct effect on peace restoration.

Empirical results

This section reports the descriptive statistics of the variables of interest and exploratory factor analysis conducted in determining the consistency and reliability of the observed items that were operationalized as explanatory variables in our statistical model of entrepreneurial-peace model.

Descriptive statistics

Tables 1presents descriptive statistics for the observed variables. From the table, it follows that the respondents' perceptions on entrepreneurship-peace relationship appear correspond with the entrepreneurial behaviour theory. Each of the indicators that measured endogenous and exogenous variables are on a different content of 5-point scale. Since the latent variables are measured by their respective indicators, and they are formative in their forms,

the simplest way to describe the data it is to take the sum of the scores of the individual indicators (Tang et al. 2013). The mean value, 2.8, (SD=11)) of entrepreneurial participation shows that the respondents quite often participate in market activities.

Table 1. Summary of the descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ENT_PART	3526	1.00	5.000	2.798	10.958
ENT_NECE	3526	1.00	5.000	2.056	7.694
ENT_OPPO	3526	1.00	5.000	2.324	10.759
ENT_DEMO	3526	1.00	5.000	2.035	0.776
PEACE	3526	1.00	4.000	1.854	0.702

The mean rating of entrepreneurial opportunity, entrepreneurial necessity, and entrepreneurial demographic are slightly fall below the midpoint, 2.3 (SD=10.8), 2.1 (SD=7.7), and 2.0 (SD=0.8), respectively, showing that entrepreneurial propensity in the study area is below average. This reflects the view that the respondents quite often discuss peace restoration as a potential of entrepreneurship with each other. However, the mean ratings are below the midpoint, indicating that entrepreneurial propensity in the study area is below average. This is not surprising as it reflects the effect of insurgency, being an external factor, still perceived to be resonating as the markets in the region have not been fully recover to economic activities. One would have expected high rates for the reason that the BAY states are centres of intra commercial hub and also inter routes for cross-broader trade, but unfortunately, the rates are low. Also, the mean rate of peace (1.8) was found below the midpoint, reflecting the respondents' perception that peace building as a feature of enterprises in conflict ravaged region is low. However, Chandra (2017) and Tilman et al (2011) established that entrepreneurship can be an instrument of healing terrorist ideology and a springboard for promoting peace in conflict region.

Factor analysis

We use factor analysis with principal component analysis to group the indictors under respectful underlying factors that their adequately measured and determine the factors to retain before proceeding with further analysis. This method is commonly used in social science research. We use the Kaiser eigenvalue criterion and the scree test, as suggested by Nunnally and Bernstein (1997), for this purpose. According to the eigenvalue criterion, factors with eigenvalues greater than one are retained and factors with eigenvalues less than one are considered insignificant and therefore deleted.

Table 2. Exploratory Factor analysis (EFA)							
EFA 1	Component					α	Communality
	1	2	3	4	5		
PARTI_1	-.185	.745	.015	.263	.189	.697	.694
PARTI_2	.107	.864	.020	-.009	-.081		.764
PARTI_3	-.227	.773	-.057	-.010	.087		.660
PARTI_4	-.115	.812	-.031	-.076	.028		.680
PARTI_5	.004	.800	-.014	-.074	-.030		.646
PARTI_7	-.155	.683	-.154	.245	.043		.576
OPPO_2	-.075	-.083	.011	.870	.119	.630	.784
OPPO_3	-.028	-.079	-.028	.738	-.026		.553
OPPO_4	.076	.001	.021	.884	.061		.791
NECE_2	.205	-.061	.777	.025	-.021	.697	.650
NECE_3	.143	-.062	.804	-.004	.047		.673
NECE_6	.225	-.074	.696	.007	.005		.541
PEACE_3	.674	-.120	.046	-.060	.064	.735	.478
PEACE_4	.698	-.096	.064	-.073	.083		.513
PEACE_5	.689	-.085	.058	-.042	.071		.492
DEMO_3	-.058	-.107	.157	.057	.693	.774	.523
DEMO_4	-.044	-.070	.174	.031	.670		.488

DEMO_5	-.162	-.005	.161	.052	.688		.528
DEMO_6	-.060	-.054	.162	.015	.653		.459
EFA 2						Total	
Eigenvalue	4.575	2.464	1.920	1.368	1.167	11.494	
% of variance	24.08	12.97	10.11	7.20	6.14	60.49	
AVE	.47	..61	.57	.69	.45		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. AVE = average variance extracted							

Table 2, EFA 1 and EFA 2, reports the factor extraction with the eigenvalues and percentage of variances for each successive factor. Using the eigenvalue criterion method, five factors in our model deemed fit and were retained for further analysis. The Cronbach alpha (α) measures the consistency of the observed items of the factor and the value of .60 and above is often considered acceptable in exploratory research. All the five α coefficients computed are above .60 in our solution. However, attention was carefully paid to the communality values of the items in assessing how much of variation in each item is explained by the construct. The rule of thumb is that communality value above 0.3 is acceptable in exploratory research (Hair et al. 2014). Though there is no strict rule as values can vary based on the research field. However, communalities determine the total variance explained which has been suggested to be a minimum of 60%. Therefore, 13 items with low communality values (0.3 or below) were considered to poorly measure their respective factors, and they were deleted sequentially started from the lowest, leaving 19 items for the analysis, with a minimum communality of .459 and maximum of .791 (Table 2, EFA 1). The construct reliability (CR) and construct's content validity measured by communality increased when these items were deleted. As a result, the analysis generated a cumulative percentage of 60.5% with five factors extracted (Table 2, EFA 2). The orthogonal factor rotation, varimax method, applied grouped the high factor loadings that explain maximum of variance extracted by the observed variables together under their respectful factors. Discriminant validity is also established as the items' loadings for each factor are higher than all the cross loadings with other factors (Hair et al., 2014). In furtherance the factor analysis, we examined the convergent validity of the items using average variance extracted (AVE). This was calculated by taking the sum of the squared loadings divided by the number of items. As rule of thumb, an AVE value of minimum of .50 indicates that, on average, the factor explains more than half of the variance of its indictors (Sarstedt, et al., 2017). The AVE values in our analysis are above the threshold of .50 for the five factors, given as: .61, indicating convergent validity for reflective construct ENT_PART (factor 2); .69 for reflective construct ENT_OPPO (factor 4); .57 for reflective construct ENT_NECE (factor 3); except .47 for reflective construct PEACE (factor 1); and .45 for reflective construct ENT_DEMO (factor 5); however, they are taken as .50 on approximation (Table 2, EFA 1), indicating that the items measuring each of the unobservable construct explained at least a middling variation of the construct that they respectively measured. Low AVE value is common in SEM with large sample size but admissible, considered to provide stable and precise estimate of the true population AVE (Farag, et al. 2025; Hair et al., 2019)

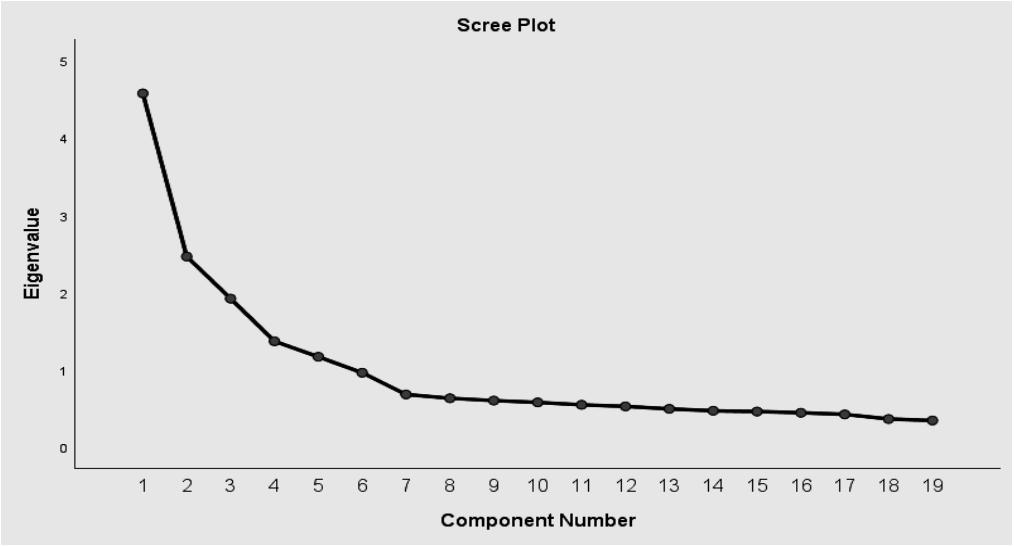

Fig.1 Scree test

The scree test, Figure 1, a graphical method of determining the number of appropriate factors to retain, conducted by plotting the eigenvalue magnitudes on the vertical axis against the component numbers on the horizontal axis and determining the point at which the plot becomes fairly horizontal. It also indicates that, Fig. 1, the point where the line becomes fairly horizontal starts at about factor five. Similar to the result of the eigenvalue criterion method. Thus, the five factors in our model are deemed fit to further the analysis.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.833
Bartlett's Test of Sphericity	Approx. Chi-Square	21230.345
	df	171
	Sig.	.000

Following Hair et al. (2014), we also assess the suitability of our data for the analysis using the Kaiser–Mayer–Olkin's (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The sampling adequacy test predicts if data are likely to factor well, based on correlation and partial correlation. The KMO measure value in our case was .833, Table 3, greater than the recommended measure value of 0.6. More so, Bartlett's test of sphericity was used to test for presence of correlations among the variables. The result shows that there is a significant correlation among at least some of the variables, implies that the variables meet the requirements for factor analysis. Generally, Table 2 shows that factor analysis yields a satisfactory result as the criteria to proceed for SEM estimation are met.

The estimated SEM model

Prior to the estimation of SEM model, the measurement model was evaluated as regards to the validity and reliability of the construct variables. This is achieved by looking at the measurement relationship between observed (indicator) and unobserved (latent) variables; correlations relationships among the unobserved variables; and error terms for the observed variables. The estimated coefficients of the measurement model are estimates of indicator variables' loadings that show the degree to which the observed variables are related to their respective unobserved variables. In the estimation process, one path correlation among the indicator variables is fixed to achieve model identification and define the scale of the latent variable.

Table 4. Measurement model (standardized coefficients)

Latent Variables	indicators	Coefficient	S.E.	R^2
ENT_PART	PARTI_3	.793***	-	.628
	PARTI_4	.802***	.021	.644
	PARTI_5	.690***	.021	.475
	PARTI_7	.592***	.023	.350
ENT_OPPO	OPPO_2	.519***	-	.269
	OPPO_4	.599***	.130	.359
	OPPO_5	.773***	.130	.598
ENT_NECE	NECE_2	.722***	.045	.521
	NECE_3	.685***	.042	.470
	NECE_6	.581***	-	.337
PEACE	PEACE_3	.668***	-	.446
	PEACE_4	.738***	.033	.544
	PEACE_5	.680***	.031	.462
ENT_DEMO	DEMO_2	.642***	-	.412
	DEMO_3	.757***	.036	.574
	DEMO_4	.653***	.033	.426
	DEMO_5	.634***	.035	.402

Goodness-of-fit measures
GFI (≥.90) = .925
CFI (≥.90) = .874
RMSEA (≤.08) = .076
*** denotes p = 0.01

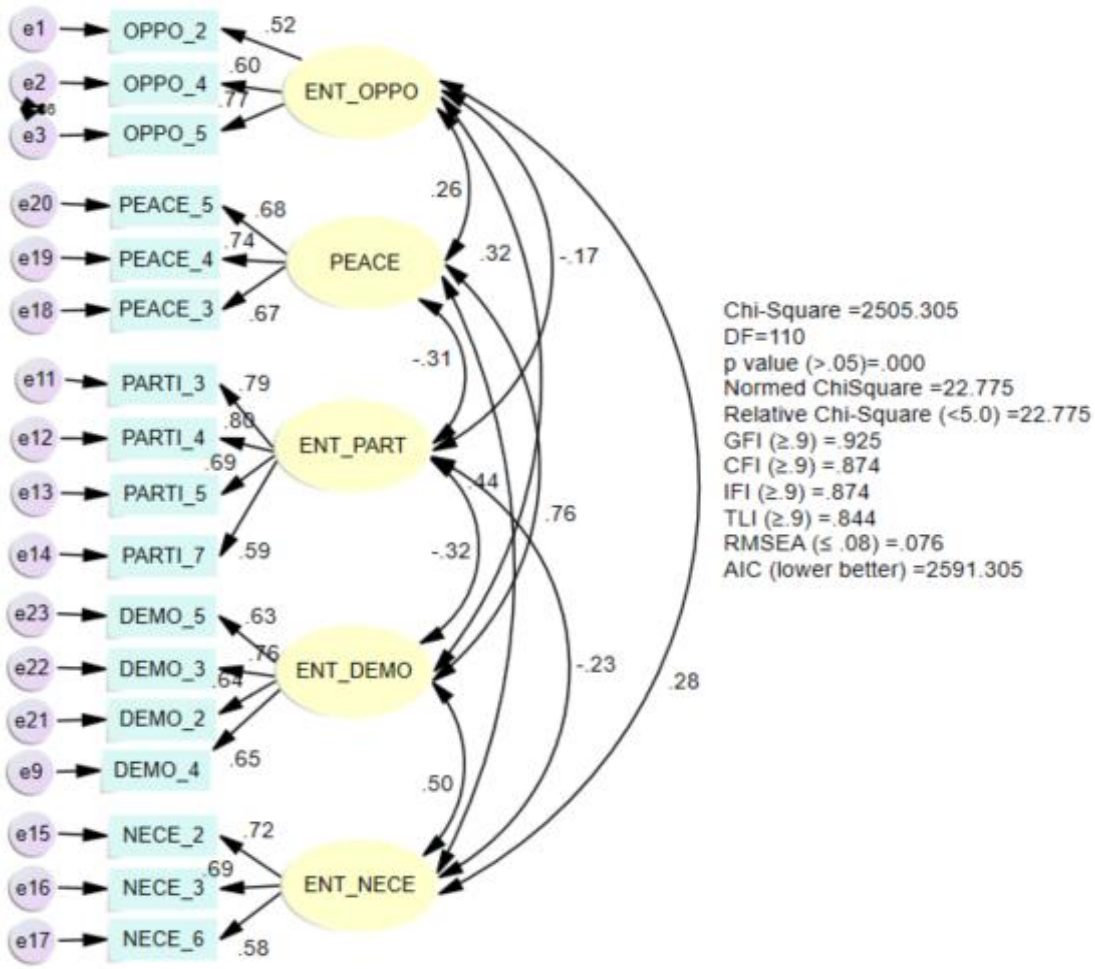

Figure 3. Measurement model

Table 4 shows that all factor loadings in the measurement model are highly significant, except PART1_1 and PART_2, which were dropped because their factor loadings are below the tolerable threshold of .4 and their removal increased the validity of the model (Adedeji et al., 2016; Hair et al., 2014). It follows that, from table 4, PARTI_4, _3, and _5 are most important indicators of entrepreneurial participation while PARTI_7 is shown to be a weak measure of the variable. This is equally shown the by R^2, showing that the reliabilities of these three indicators are higher than PARTI_7, whose reliability is measured by 0.592. The coefficients of the retained items are substantially above the threshold of level of 0.20 (Tang et al., 2013), implies that all the items have adequate internal consistency. The same explanation applies to the other four constructs and their measured variables. Hence, the items' coefficients exhibit that the five reflective constructs have sufficient reliability. The coefficient can be interpreted as, for PARTI_4 for instance, a standard deviation increases in a latent variable, leads to inter alia a 0.802 standard deviation increase in entrepreneurial participation. The goodness-of-fit of this model was examined using the three main criteria in covariance-based literature: goodness of fit index (GFI); comparative fit index (CFI); and the root mean square error of approximation (RMSEA). Though, there are no commonly accepted cut-offs for these goodness-of-fit indices (Hooper et al., 2008), considering large sample size of our study, the GFI and CFI indices ≥ .90 and RMSEA ≤ .08 are considered to indicate that data are reasonably fit the model. From Table 4, the panel below, the GFI index (.925) greater than .90, and CFI index (.874) close to .90, and RMSEA index (.076) on absolute value is less than .08. These indicate that the model performs better and it well reproduces the observed data, thus, allowing us to proceed for SEM equation (4) and test of the hypotheses specified.

Table 4. Estimated SEM model - standardized direct, indirect and total effects

	Direct effect		Indirect effect	Total effect	
	ENT_PART	PEACE	PEACE	ENT_PART	PEACE
	Coeff. (se)	Coeff. (se)	Coeff.	Coeff	Coeff
ENT_PART	-	.085 se(.020)*	-	-	.085 se(.020)*
ENT_OPPO	.058 se(.005)*	-	.005 se(.001)*	.058 se(.005)*	.005 se(.001)*
ENT_NECE	.119 se(.020)*	-	.010 se(.003)*	.119 se(.020)*	.010 se(.003)*
ENT_DEMO	.285 se(.021)*	.758 se(.022)*	.024 se(.005)*	.285 se(.021)*	.758 se(.020)*
R^2	.09	.58			
Goodness-of-fit measures					
GFI (≥.90) = .899					
CFI (≥.90) = .825					
RMSEA (≤.08) = .088					
* denotes p = 0.01. se = standard error.					

Table 4 presents the estimated structural model. The R^2, .58, indicates a good fit for our entrepreneurial-peace model, and as well the goodness-of-fit indices (Figure 3) are not substantially difference from the indices achieved for measurement model. Generally speaking, the standardized coefficients are in line in terms of practical significance, statistical significance, and size. The coefficients of .058 and .119 support the hypotheses that entrepreneurial opportunity and entrepreneurial necessity are respectively motivate entrepreneurial intention to participate in entrepreneurship in the study area. However, entrepreneurial necessity appears to more motivate participation in entrepreneurship in post-conflict as people are more likely to engage in market activities owing to necessity to survive and to be economically self-reliance, though it can be promoted through entrepreneurial opportunities (through market opportunities, institutional opportunities, non-institutional opportunities). Similarly, as expected, relationship is found between entrepreneurial demographics and entrepreneurial participation, the coefficient (.285) is positive and significant, suggesting that demographic particularly education (DEMO_3) and experience (DEMO_2), figure 2, stimulates participation in entrepreneurship of the people in Northeast Nigeria. Interestingly, entrepreneurial demographic is found to have more impact on peace restoration than entrepreneurial intention of the entrepreneurs, the regression coefficient, .734, is found to be positive and significant at the 1%.

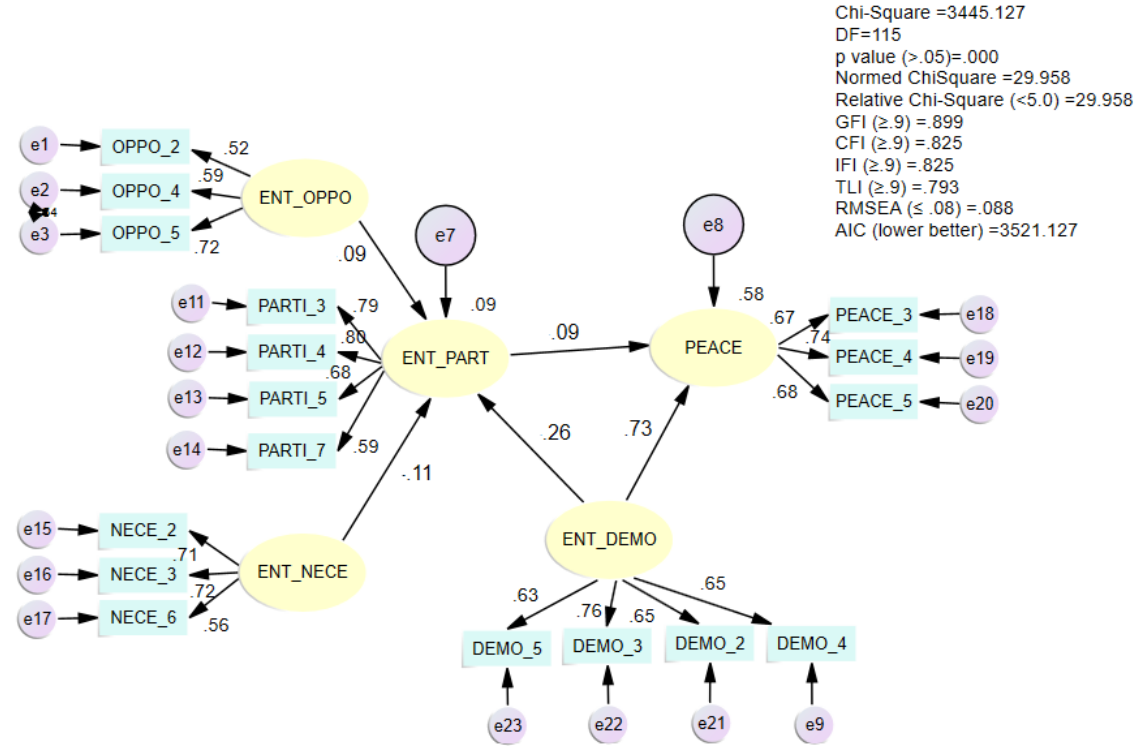

Figure 2: Estimated Path SEM

This result points at two important aspects. First, the evidence that the direct effect of ENT_NECE on ENT_PART was positive and significant, supports hypothesis H1, indicating that entrepreneurial necessity (e.g., to survive, work available, destruction of former job) is positively associated with entrepreneurial participation. Support for H2 is provided by a positive and significant positive relationship between ENT_OPPO and ENT_PART, implies that ENT_OPPO (e.g. market spotted opportunity, entrepreneurial training, financial support, non-financial support) positively influenced ENT_PART. On average, a one standard deviation point increase in opportunity sited in the market, and entrepreneurial necessity, may likely result to .058, and .119, of a standard deviation increase in participation in the entrepreneurial activities in the Northeast, respectively. In line with Sekliuckiene and Kisielius (2015) study which affirmed that entrepreneurial opportunity creates a significant impact in communities for its potential to provide solutions to complex social problems. Similar to Colovic and Mahrotrah's (2020) and Janet et al.'s (2015) studies, entrepreneurial opportunity and entrepreneurial necessity generate employment, reduce poverty, enhance entrepreneurial skill acquisition, and create societal inclusion, and empowerment. Similarly, Bruton et al. (2015) highlighted in their findings that entrepreneurial opportunity increased chance to participation of less privilege especially women in the market. These results also consistent with the findings of Janet et al. (2015) who found that there was positive relationship between small and medium scale enterprises and national development with the correlation coefficient found at 0.87. They concluded that entrepreneurial innovativeness is a critical key to economic recovery and development.

Second, the direct relationship from ENT_DEMO to ENT_PART was positive and significant at the 1%, this supports hypothesis H3. The direct relationship from ENT_PART to PEACE, .085, is positive and significant at the 1%, supports hypothesis H4. The standardized regression weight from ENT_DEMO on PEACE of .734 is also positive and significant which support hypothesis H5. ENT_DEMO appears to have a strong positive effect on PEACE, indicating that entrepreneurial demographic traits (e.g. education, progeny, experience) is positively associated with peace restoration, and likely to serve as driven process for peace in conflict-affected area on the Northeast, Nigeria. On average, a one standard deviation point increase in entrepreneurial demographic traits, and in market participation, may likely result to .734 and .085 of a standard deviation in peace restoration in the Northeast, respectively. These results were attested by the statistically significance of the standardized direct path coefficients of the model, supporting the hypothesized positive relationship.

The direct weight structural path coefficient of ENT_DEMO (.734), from the indicators: education, experience, and family responsibility, suggests that entrepreneurial demographic has a large effect on peace restoration. This conforms with Colovic and Schruoffeneger (2021) study that found that demographic traits - education, experience, and family responsibility - prompt entrepreneurs to involve in creating innovations and social values. In Colovic and Mehrotrah (2020) and Cabrera and Mauricio (2017) findings, the importance of demographic entrepreneurial traits, especially for entrepreneurial women, was acknowledged that the entrepreneurial demographic traits build, develop, and are agent of change for society. With this result, the second objective of the study is achieved. In our view, this result, to a large extent, confirm that entrepreneurial opportunity, entrepreneurial necessity and entrepreneurial demographic can contribute to restore peace in the Northeast Nigeria.

As a robust check, we explore the indirect effects of ENT_NECE, ENT_OPPO, and ENT_DEMO on PEACE through ENT_PART, Table 4, all the indirect weight coefficients were calculated based on 5,000 bootstrap samples, and the 95 percent confidence interval (CI) were constructed by using percentile-based bootstrap. The specific indirect effects of ENT_NECE (0.10), ENT_OPPO (.005), and ENT_DEMO (.024) are found to be positive and statistically significant at 1%, indicating that the three mediator variables mediate a strong for peace restoration and mediates the relationship between ENT_PART and PEACE. Comparing the specific indirect effects of these variables, ENT_DEMO has a strong mediating effect among the mediators. Though, the mediating of ENT_PART on the relationship between ENT_DEMO and PEACE is positive and significant but the effect is relative weak (.024) compare to the direct effect (.734). Taking as aggregate, the total effects of the three mediators found to be positive and significant at the 1% level. However, the strength of the indirect effects form ENT_NECE (.010) and ENT_OPPO (.005) were dropped compare to their total or direct effects. But the indirect effect from ENT_DEMO (.024) is found to be stronger. This can be reliably interpreted that education and employment can increase participation in entrepreneurship which in turn could reduce indoctrination to violence and promote peace. In other words, this reflects the fact that entrepreneurship can contribute

significantly to restoring and sustaining peace and peacebuilding processes in conflict affected region of the north east Nigeria. However, this depends more on innovation systems through education, entrepreneurial training and skill acquisition (IPI, 2017; Radosevic and Yoruk, 2013).

CONCLUSION

In this paper we have analyzed the influence on peace restoration of entrepreneurial opportunity, necessity, and entrepreneurial demographic, based on a cross-sectional dataset of 3526 of entrepreneurs from Adamawa, Borno, and Yobe states in Northeast Nigeria. Structural equation modeling (SEM) was applied to estimate the conceptual model based on the literature review. The main results and their policy implications are the following. First, our main hypothesis was that the interactions between entrepreneurial opportunity (ENT_OPPO), entrepreneurial necessity (ENT_NECE), and entrepreneurial demographic (ENT_DEMO) can promote peace and create a favourable peacebuilding in post-conflict. We explored the nature of that interaction using SEM method. Our results reflect a systemic potential of entrepreneurship as a counterinsurgency strategy for peace restoration and emancipation from indoctrination. We believe that the findings demonstrate the potential of entrepreneurship to peace restoration. The direct effects entrepreneurial opportunity, necessity, and entrepreneurial demographic is positive and significant, indicating that entrepreneurial engagement reduces idleness, enhances social interaction, and supports livelihood recovery, thereby contributing to stabilization in the conflict affected community. Second, our results demonstrate that the strength of the indirect effects form ENT_NECE (.010) and ENT_OPPO (.005) were dropped compare to their total or direct effects. But the indirect effect from ENT_DEMO (.024) is found to be stronger. This can be reliably interpreted that education and employment can increase participation in entrepreneurship which in turn could reduce indoctrination to violence and promote peace. This is de facto confirmation of the systemic nature of entrepreneurship which has been empirically tested for the first time in this paper.

Third, application of SEM has confirmed that the data fits the reflective entrepreneurial-peace model. The EFA and CFA confirm the dimensions that adequately explain theoretical model. Our result show strong limits of policy metrics which is confined on number of knowledge intensive enterprises as criterion. In short, our results demonstrate strong relevance of systemic policies which take into account co-evolution between institutional and noninstitutional supports, education, entrepreneurial training and skills, and poverty alleviation. Based on this, we recommend integrated interventions combining entrepreneurship development, peacebuilding, psychosocial support, anti-indoctrination strategies, and institutional strengthening to achieve sustainable recovery and balance. Based on these findings, designing startup grant programs that specifically target "pro-peace" businesses would support victims of violence and enhance economic recovery in the area. Priority should be given to ex-militants and displaced persons when implementing vocational training and entrepreneurship training initiatives. An integrated entrepreneurship development strategy should be designed, with particular focus on youth empowerment, this may help the vulnerable people and promote peace and inclusive societies. Lastly, the collaboration between local businessmen and local government should be strengthen in order to solve the social problem. This will enable a fast-paced resettlement, rehabilitation, and reconstruction agenda in the region, building new lives, creating jobs, and inclusive opportunities, and tangibly enhancing the restoration and sustainability of peace in affected communities.

We recognize that this study is limited in some aspect. For instance, the choice of indicators used to measure the unobserved variables in this study can not be satisfactory, despite that they were rigorously tested and found that the retained items were adequate for this analysis. Nonetheless, future work should re-examine indicators. The future study may be expanded by including indoctrination in the model as moderator, and compare the results, and explore the mix of quantitative and qualitative. However, the quantitative perspective on entrepreneurship as used in this study as an indispensable to more qualitative accounts.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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