Mediation Analysis of Entrepreneurship Development on the Economic Growth of Women Entrepreneurs in Nigeria

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Mediation analysis of entrepreneurship development on the economic growth of women entrepreneurs in Nigeria

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Abstract:

The study used structural equation modelling (SEM) techniques to examine the mediation analysis of entrepreneurship development on the economic growth of women entrepreneurs in Nigeria. The study assumes the existence of three null hypotheses; entrepreneurship development does not mediate business performance, psychological, and knowledge of business practice indicators for economic growth. Data were collected from 500 randomly selected women entrepreneurs in Nigeria. Our results suggest that separating household and business income, maintaining a separate business account, stock-keeping, record-keeping among other were the knowledge of business practice indicators; openness to change, desire for self-independent among others were the psychological indicators, and reduced inactivity, increase in the size of the inventory among others were the business performance indicators that stimulate entrepreneurship development. The aforementioned catalyzed higher formalization, increases in capital investment among others as entrepreneurship development indices, which stimulate economic growth of contribution to personal and children school fare, reduction in financial dependence, and increase in affordable health care fee among others. We also established that entrepreneurship development mediates knowledge of business practice to economic growth.

Keywords: mediation analysis, entrepreneurship development indicators, economic growth, Nigeria

1.0 Introduction

In a real sense, economic growth is a macro-economic concept reflecting the process of increasing the sizes of national economies (Alina-Petronela, 2012). Addison (2015) viewed economic growth as a powerful tool for reducing poverty and improving the quality of life. Growth on its own is capable of generating a virtuous cycle of prosperity and opportunity. Adu

et al. (2019); Ravallion (2007) contend that economic growth creates employment opportunity for improving incentives for women to invest in their children's education. This aspect of macro-economic promotes the development of entrepreneurs. Ndulu *et al.* (2007) corroborate that economic growth should be measured from the point of physical capital (asset acquisition) and human capital (education and skills) development. Economic growth should be centred on developing strategies for poverty reduction tailored to sustainable economic development for women entrepreneurs. To drive this focus on economic growth, the capacity of women should be built to improve their management skills which are sort for by every entrepreneur. Standing on this economic growth mechanism, the economic capacity of the women should be empowered in form of women agency.

The term women agency means the act of giving women power and control over their own lives. This empowerment energizes the women to participate in social movements and the process of emancipation (Sharifah, 2015). Rajeshwari, 2015; Selvi and Bakialekshmi (2017) suggested that women agency or empowerment implies increasing the spiritual, political, social, educational, gender or economics strength of individuals and communities of women. Far back in 2009, Anju *et al.* contend that women empowerment affords the women the ability to make strategic life choices which they had been previously denied, seeing that this will help them to make and act on economic decisions (Golla *et al.*, 2011). Selvi and Bakialeshmi (2017) noted that social background, culture and educational level plays an important role to getting the women empowered, this is because Rajeshwari (2015) contend that women empowerment will contribute to the development of the country's economic, social and political space. Empowering women will mean getting women involved in economic activities and these must be with a sensitive intention seen that women oftentimes are victims of gender discrimination, lack of equal opportunities in education, rape, abuse and torture, kidnap, financial constraints among others. These justify the need for the women to be organized and develop themselves into entrepreneurs. Women entrepreneurs by Anju (2015) connotes woman or groups of women who initiate, organize and run a business enterprise. While entrepreneurship as a process makes the women economically strong and freedom to take decisions since women entrepreneurs initiate, organize and operate the business enterprise. Entrepreneurship development helps to build a country's gross domestic product (GDP) as an important component of the demand side of job creation strategies in developing countries (Fox and Kaul, 2017) which Smriti (2020) contend

that it is a key to economic development. Swetha *et al.* (2014) assert that entrepreneurship development was conceived by successive governments as a program of activities to enhance the knowledge, skill, behaviour and attitudes of individual and groups to assume the role of entrepreneurs who manages production resources for product developments. Magnus and Tino (2014) further opined that entrepreneurship has no specific definition noting that what was defined as entrepreneurship in some countries may not be viewed as entrepreneurship in another, they equally contend that entrepreneur is sometimes used to refer to anyone operating a private business regardless of size and activities. Far back in 1934, Schumpeter proposed that a true sense of entrepreneurship should be rested on firms that are innovative and growth-driven and should be capable to cause a shift in economic equilibrium. Later in 1942, Schumpeter added that the function of an entrepreneur is to revolutionize the pattern of production by exploiting an innovation or more generally an entire technological possibility for producing a new commodity or production of old ones in a new way by opening up a new source of supply for the product. This clearly shows that most small businesses are not in true sense entrepreneurial as they do not bring innovation to the market. Most women in true sense are self-employed and are often mistaken as entrepreneurship, Magnus and Tino (2014) revealed that women in developing countries are more involved in farming, restaurant, child daycare, beauty salon among others, more attention should be paid to self-employed women hence it is capable of empowering them economically.

For quality entrepreneurship development in an economy, Zenobia (2018) contend that entrepreneurs should be made to undergo training which should be preceded with a grant, internship and mentorship which will help to empower the women whom Obianefo *et al.* (2019); Valerio *et al.* (2014) considered economically vulnerable. Corroboratively, Ayoade and Agwu (2015) stressed that governments should focus on encouraging entrepreneurship development due to its role in job creation, innovation, importance to large businesses and a dynamic economy. Considering the importance of the study, Zenobia (2018) pointed some indicators that signal entrepreneurship development in an economy whose outcome would bring about economic growth, these Zenobia's indicators are different from the income and profit indicator proposed by Cho and Honorat (2014). The Zenobia's (2018) indicators include business practice and knowledge (formalized record-keeping, separating household and business income, separate business account, improved marketing strategies, stock-keeping practices), business performance

(income and profits, Sales, number of wage workers, size of inventory, business start-up, increased hours of work or increased employment, reduced inactivity, loans, savings, business survival, business growth), and psychological indicators (women's agency or decision-making capacity, confidence, self-confidence and teamwork), with an intermediate indicator signalling entrepreneurship development (more start-ups, increases in investment, improved business knowledge/skills, improved agency over business decisions, higher formalization, improved business practices and performance, increased market access, and more employment) and outcome indicators that symbolizes economic growth. For the clarity of purpose, all these indicators are targeted at stimulating the economic growth of women. Thus, the study adopted a structural equation modelling approach with kin attention to mediation analysis for a better understanding of how the indicators interact with each other. Obianefo *et al.* (2020) assert that mediation is the introduction of an intermediate variable called a mediator that helps to explain how or why an exogenous variable(s) influences an outcome or endogenous variable(s). MacKinnon and Fairchild (2009) and Douglas *et al.* (2013) noted that it is of great interest to identify the mechanisms through which an intervening variable (mediator) achieves its effect on the outcome variable(s). We, therefore, wish to conceptualize (Figure 1) the following hypotheses:

Ho1: entrepreneurship development does not mediate business performance indicators for economic growth.

Ho2: entrepreneurship development does not mediate psychological indicators for economic growth.

Ho3: entrepreneurship development does not mediate knowledge of business practice indicators for economic growth.

reasons from where two States were randomly selected for the study (Southeast: Anambra and Ebonyi, South-south: Akwa Ibom and Rivers, Northwest: Kaduna and Kano, North-central: Niger and Plateau, Southwest: Lagos and Ogun). A well-structured questionnaire and interview schedule was used to collect data from a cross-section of women entrepreneurs. Research assistants were engaged from each State and empowered with SurveyCTO data collect tool (Android data tool kit) through online training. Despite that the use of SurveyCTO complied with COVID-19 guidelines of reducing physical contact, it also helps to improve the quality of data which prevents falsification of information by the research assistants since the database is linked directly to the analyst SPSS package. The good thing about the SurveyCTO is that both the data and GPS coordinates of the respondents can be collected offline which is later uploaded over the internet to the researcher's database.

Finally, fifty women entrepreneurs were randomly sampled from each State to make a sample size of 500 women for the study.

3.0 Methods

3.1 Analytical framework

Schreiber (2008), Raykov (2005) and Byrne (2004) corroborates that structural equation modelling (SEM) is a multivariate statistical analysis technique that is used to analyze structural relationships between measured variables and a latent observation otherwise called construct. This technique is a hybrid of factor analysis and multiple regression analysis. This method is often preferred by researchers due to its ability to estimates the multiple and interrelated dependence of a variable in a single analysis. Scholars like Newsom *et al.* (2016) contend that testing the internal consistency of data before subjecting them to structural analysis is very important. Hence the first step is to conduct a default principal factor analysis (PFA) before estimating the causal effect of the connection between the variables (Williams, 1995). Douglas *et al.* (2013) mathematically defined this structural equation modelling in equation 1 and 2 as:

$$Z_i = \beta_i + \beta_{xz}X_i + \varepsilon_{zi} \quad (1)$$

$$Y_i = Y^*_o + Y^*_{zy}Z_i + Y_{xy}X_i + \varepsilon_{yi} \quad (2)$$

The error terms (ε_{zi} and ε_{yi}) are uncorrelated. These two structural equations are linked together to influence outcome simultaneously unlike two independent standard regression equation, while ($\beta_{xz}X_i$) is the direct effect of the path from independent variables to the outcome variable through the mediator. Also, Y_{xy} is the direct effect, and $\beta_{xz} + Y_{xy}$ is the sum of the total effect (Clogg *et al.*, 1992, Douglas *et al.*, 2013 and Obianefo *et al.*, 2020). Imai *et al.* (2010) defined SEM in a reduced regression method without a mediator as:

$$Y_i = Y^*_o + Y^*_{xy}X_i + \varepsilon^*_{yi} \quad (3)$$

Furthermore, the mediation effect of SEM was defined by Hair *et al.* (2013) in equation 4 as:

$$Z = \frac{a*b}{\sqrt{(SE_a)^2*(b^2) + (SE_b)^2*(a^2)}} \quad (4)$$

Where a , b , SE_a , and SE_b are the coefficient of exogenous (independent variable), coefficient of endogenous (dependent variable), standard error of the exogenous and standard error of the endogenous variable respectively. It was not out of place to ensure that the convergent validity was achieved where Fornell and David (1981) proposed composite reliability ($CR \geq 0.7$) and average variance extracted ($AVE \geq 0.5$) defined in equation 5, 6, 7 and 8 as:

$$CR = \frac{(\sum \beta_i)^2}{(\sum \beta_i)^2 + \sum var(\varepsilon_i)} \quad (5)$$

$$Var(\varepsilon_i) = 1 - \beta_i^2$$

(6)

$$FL = \sqrt{CR} \quad (7)$$

$$Error\ variance = 1 - CR \quad (8)$$

Where β_i is the standardized regression weight of each variable on a construct, $Var(\varepsilon_i)$ is the error variance, FL is the factor loading. To strengthen the mediation analysis, Fornell and David (1981) contend that the square correlation from the explanatory factor analysis (EFA) of all the construct must be less than the AVE.

SEM also allows for a modification of path until a good fit model is achieved. Due to its complexity, experts devised indices of “goodness of fit” or “approximate fit” using maximum likelihood estimation (MLE) to ensure that researchers come up with a model that meets the stated hypotheses. This goodness of fit indices should express the degree of approximation plus estimation discrepancy, and to provide an additional base for the acceptance or rejection of a

model. Almost all the goodness-of-fit indices (GFI) are based on Chi² (χ^2) and degree of freedom (df) as defined by Hu and Bentler (1998, 1999) in equation 9 as:

$$GFI = 1 - \frac{\hat{F}}{\hat{F}_b} \quad (9)$$

$\hat{F}$ is the minimum value of the discrepancy function, $\hat{F}_b$ is obtained by evaluating F with g from

maximum likelihood estimation defined by Bollen (1989b) in equation 10:

$$\sum_{g=1,2,\dots,G} (g) = 0 \quad (10)$$

The second model fitness called Turker-Lewis coefficient or index (TLI) is defined by Betler and Bonett (1980) as:

$$\rho^2 = \frac{\frac{c_b - \hat{c}}{d_b - d}}{\frac{c_b}{d_b} - 1} \quad (11)$$

where $\hat{C}$ and d are the discrepancy and the degrees of freedom for the model being evaluated

respectively, $\hat{C}_b$ d_b is the discrepancy and the degrees of freedom for the baseline model. The

typical range for TLI lies between zero and one, but it is not limited to that range, the value close to one indicates a very good fit. The third model indices we obeyed was comparative fit indexes (CFI) defined by Bentler (1990) as:

$$CFI = 1 - \frac{Max(\hat{C}-d,0)}{Max(\hat{C}_b-d_b,0)} = 1 - \frac{NCP}{NCP_b} \quad (12)$$

where $\hat{C}$ is the discrepancy, NCP is the non-centrality estimate for the model being evaluated,

$\hat{C}_b$, NCP_b and d_b are the discrepancy, non-centrality and degree of freedom for the baseline

model respectively. This CFI model is identical to McDonald and Marsh (1990) relative non-centrality index (RNI) defined as:

$$RNI = 1 - \frac{\hat{C}-d}{\hat{C}_b-d_b} \quad (13)$$

The only distinguishing features of CFI and RNI is that Bentler (1990) contend that CFI is truncated to fall in the range zero to one. Thus, a CFI value close to 1 indicates a very good fit

model. Finally, we also bore in mind the root mean square error approximation (RMSEA) which has an indirect relationship with the residuals since it is based on Chi-square (χ^2), degree of freedom (df) and sample size (N). It is therefore defined by Hu and Bentler (1998, 1999) where the formula is expressed as:

$$RMSEA = \sqrt{\frac{\chi^2 - df}{df(N-1)}} \quad (14)$$

Several suggestions have been made regarding the critical cutoff values to determine the acceptance or rejection of a model, among which Hu and Bentler (1998, 1999) have been very influential. According to Kenny (2012), some of this goodness of fit model indexes often reported in SEM studies include root mean square error of approximation ($RMSEA \leq 0.06$), comparative fit index ($CFI \geq 0.95$), and Tucker-Lewis index ($TLI \geq 0.95$) among others. They are of the note that the χ^2 should be very low. All these suffice to determine the point of rejection or acceptance of the SEM.

4.0 RESULT AND DISCUSSIONS

4.1 Tested Assumptions: Convergent validity and Discriminant validity

4.1.1 Convergent validity:

One peculiarity of structural equation modelling (SEM) is that they are subjected to a series of assumptions. Before the examination of the study hypotheses proceeded, we checked the level of the establishment of some assumption which includes: unit dimensionality, convergent validity, and discriminant validity. The unit dimensionality approach was used to ensure that construct observation on each indicator(s) with the highest estimate was constrained to enable the SEM convergence. For the **Convergent validity**; Agarwal (2013) noted that it is a theoretical base that describes the observable properties which refer to the degree to which measures of the construct are related. This corroborates Carlson and Herdman (2012) earlier assertion that suggested convergent validity should not be less than 0.5. The study of Fornell and David (1981) examined the convergent validity using the composite reliability (CR) test and average variance extracted (AVE). The CR is a measure of internal consistency in scale items which Fornell and David (1981); Brunner and Süß (2005) contend that the benchmark for the establishment of the assumption is 0.7. Though, some scholars assert that the value is still debatable as others like Diamantopoulos and Siguaw (2000) suggested a benchmark of 0.6.

Furthermore, Tellis *et al.* (2009); Hair *et al.* (2006) noted that AVE is the average amount of variance in measured variables that a construct observation can explain. Fornell and David (1981); Brunner and Süß (2005) also suggested that an acceptable benchmark for the establishment of AVE is 0.5. Table 1 reflects the establishment of convergent validity of the five indicators of entrepreneurship development and economic empowerment as conceptualized by the study. The Table shows that knowledge of business practice (KBP) and business performance (BP) indicator were fully established, while psychological indicator (PSYI) and entrepreneurship development indicator (EDI) was partially established. Furthermore, the study shows that economic growth indicator (EGI) was not established based on acceptable CR and AVE.

Table 1: convergent validity of study indicators

Indicators	CR	AVE	Cronbach's alpha	Decision
KBPI	0.849	0.489	0.832	Established
PSYI	0.728	0.368	0.726	Partly established
BPI	0.928	0.606	0.611	Established
EGI	0.482	0.178	0.913	Not established
EDI	0.698	0.268	0.741	Partly established

Source: Field Survey Data, 2020.

4.1.2 Discriminant validity

A default explanatory factor analysis (EFA) as shown in Figure 2 was estimated to calculate the discriminant validity of the SEM data, Engellant *et al.* (2016) contend that discriminant validity is the extent by which measures of different constructs diverge or minimally correlate with one another. Hair *et al.* (2006) noted that, for the assumption to be fully established, the AVE estimates should be higher than the squared correlation estimate. The above assertion corroborates the earlier opinion of Fornell and Larcker (1981) who contend that, for an acceptable discriminant validity test, any two constructs, the AVE for construct one and the AVE for construct two need to be larger than the shared variance (square of the correlation) between the two constructs. Table 2 represents the result of the discriminant validity test which shows that Knowledge of business practice indicator (KBPI) and business performance indicator (BPI); psychological indicator (PSYI) and business performance indicator (BPI); business performance indicator (BPI) and economic growth indicator (EGI); business performance indicator and entrepreneurship development indicator (EDI) are not highly correlated, therefore discriminant validity was fully established through the indicators. Also, KBPI and PSYI; KBPI and EDI are partially established therefore exhibit minimal correlation. Finally; the discriminant validity of KBPI and EGI; PSYI and EDI; EGI and EDI were not established showing a high correlation between the indicators. Thus, there is a need to watch out for the variables.

Down the Table is the model fit summary of the EFA, the five parameters used to judge the fitness of the model include the goodness of fit indices (GFI), comparative fit index (CFI),

Tucker-Lewis index (TLI), normed fit index (NFI), and root mean square error of approximation (RMSEA) out of which Kenny (2012) opined that a GFI, CFI, NFI, and TLI closer to one shows a good model, while the RMSEA should be closer to zero. Since four (GFI, CFI, NFI, and TLI) out of five parameters agree with Kenny (2012). The model is fit to accept the result of the discriminant validity.

Table 2: Discriminant validity of study indicators

Indicators			Correlation (r)	r ²	AVE ₁	AVE ₂	Decision
KBPI	<-->	PSYI	0.70	0.49	0.49	0.37	Partially established
KBPI	<-->	BPI	-0.08	0.01	0.49	0.61	Established
KBPI	<-->	EGI	0.92	0.85	0.49	0.18	Not established
KBPI	<-->	EDI	0.61	0.37	0.49	0.27	Partially established
PSYI	<-->	BPI	0.02	0.00	0.37	0.61	Established
PSYI	<-->	EGI	0.79	0.63	0.37	0.18	Not established
PSYI	<-->	EDI	0.67	0.45	0.37	0.27	Not established
BPI	<-->	EGI	-0.09	0.01	0.61	0.18	Established
BPI	<-->	EDI	0.05	0.00	0.61	0.27	Established
EGI	<-->	EDI	0.83	0.69	0.18	0.27	Not established

Model fit summary

GFI	0.733	Close to 1	Good fit
NFI	0.711	Close to 1	Good fit
CFI	0.739	Close to 1	Good fit
TLI	0.710	Close to 1	Good fit
RMSEA	0.113	Close to 0	Good fit

Source: Field Survey Data. 2020.

Figure 2: Default EFA for the discriminant validity.

4.2 Regression relationship between the construct and observed variables.

Table 3 and Figure 3 shows the result of the default SEM analysis done to determine the regression coefficient of the construct indicators and its measurement variables as well as the relationship between all the construct indicators. Down the table is a model fit summary showing a GFI (0.810), NFI (0.805), CFI (0.836) and TLI (0.814) close to 1 and an RMSEA (0.09) close to zero which was in agreement with Kenny (2012). This suggests that the model was a good fit model since they are within the appropriate threshold suggested by Hu and Bentler (1998, 1999).

This regression weight represents the causal effect and relationship between the latent construct on the observed variables. Majority of the estimates in Table 3 were significant at 1% level of significance. Improved marketing strategies (KBP6), self-confidence (PSYI2), profit venture (BP2), improved business knowledge/skills (ED3), and increased financial security through savings (EG5) were the measurement variables assumed to have a constant relationship with the latent loading. We found that psychological indicator (PSYI), knowledge of business practice indicator (KBPI) and entrepreneurship development indicator are the constructs significant at 1% level of significance. The study revealed that PSYI and KBPI had a causal effect or relationship of 0.178 and 0.381 respectively. The implication is that a 1% increase in the aforementioned constructs will increase the women entrepreneurship development ability by 0.178 and 0.381 units respectively. Also, EDI had 1.431 casual effects on economic growth (EGI) showing the unit that a 1% increase in EDI will increase EGI among women entrepreneurs in Nigeria.

The study reveals that Knowledge of business practice indicator (KBPI) was significant at 1% level of significance for all the measurements with a causal effect of 0.805, 0.750, 0.434, 0.795, and 0.382 for separating household and business income (KBP5), maintain a separate business account (KBP4), stock-keeping (KBP3), record keeping (KBP2), and use of ICT tools (KBP1) respectively.

Psychological indicator (PSYI) was significant at 1% level of significance for all the measurements with a causal effect of 0.811, 0.563, 0.502, and 0.556 for openness to change (PSY5), desire for self-independent (PSY4), team-work (PSY3), and decision-making capacity (PSY1).

Business performance indicator (BPI) was significant at 1% level of significance for all the measurements with a causal effect of 0.654, 0.993, 0.998, 0.694, and 0.625 for reduced

inactivity (BP5), increase in the size of the inventory (BP4), availability of market for the products (BP3), improved access to credit (BP1), and increased business savings (BP6).

Economic growth indicator (EGI) was significant at 1% level of significance for all the measurements with a causal effect of 0.065, 0.676, 0.315, 0.283, and 0.724 for contributing to personal and children school fare (EG6), reduction in financial dependence (EG4), increase in affordable health care fee (EG3), contributes to the family food budget (EG2), and increase in revenue or income (EG1).

Entrepreneurship development indicator (EDI) was significant at 1% level of significance for all the measurements with a causal effect of 0.907, 0.677, 0.920, and 0.633 for higher formalization (ED5), improved agency over business decisions (ED4), increases in capital investment (ED2), and ownership of a business (ED1). The rest of these indicator is defined in a supplementary materials (SM1).

Figure 3: Regression relationship between the construct and observed variables.

Table 3: Regression relationship between the construct and observed variables.

Variables			Estimate	S.E.	C.R.	P
EDI	<---	BPI	0.013	0.029	0.434	0.664
EDI	<---	PSYI	0.178	0.043	4.089	***
EDI	<---	KBPI	0.381	0.043	8.939	***
EGI	<---	EDI	1.431	0.127	11.233	***
KBP6	<---	KBPI	1			
KBP5	<---	KBPI	0.805	0.034	23.449	***
KBP4	<---	KBPI	0.75	0.035	21.517	***
KBP3	<---	KBPI	0.434	0.043	10.1	***
KBP2	<---	KBPI	0.795	0.041	19.361	***
KBP1	<---	KBPI	0.382	0.043	8.95	***
PSY5	<---	PSYI	0.811	0.052	15.717	***
PSY4	<---	PSYI	0.563	0.055	10.29	***
PSY3	<---	PSYI	0.502	0.063	7.968	***
PSY2	<---	PSYI	1			
PSY1	<---	PSYI	0.556	0.054	10.204	***
BP5	<---	BPI	0.654	0.039	16.718	***
BP4	<---	BPI	0.993	0.026	38.292	***
BP3	<---	BPI	0.998	0.011	88.603	***
BP2	<---	BPI	1			
BP1	<---	BPI	0.694	0.031	22.445	***
BP6	<---	BPI	0.625	0.049	12.723	***
EG6	<---	EGI	0.065	0.081	0.798	0.425
EG5	<---	EGI	1			
EG4	<---	EGI	0.676	0.061	11.033	***
EG3	<---	EGI	0.315	0.051	6.216	***
EG2	<---	EGI	0.283	0.063	4.466	***
EG1	<---	EGI	0.724	0.076	9.58	***
ED5	<---	EDI	0.907	0.066	13.669	***
ED4	<---	EDI	0.677	0.074	9.197	***
ED3	<---	EDI	1			
ED2	<---	EDI	0.92	0.085	10.853	***
ED1	<---	EDI	0.633	0.074	8.53	***
Model fit summary						
GFI	0.81				Close to 1	Good fit
NFI	0.805				Close to 1	Good fit
CFI	0.836				Close to 1	Good fit
TLI	0.814				Close to 1	Good fit
RMSEA	0.091				Close to 0	Good fit

4.3 Mediation Analysis

Table 5 shows the result of the mediation analysis run to test for the stated hypotheses. For simplicity, we calculated the average all the measurement variables that made up each indicator(s) which enabled us to re-draw the path diagram (see Table 5 and figure 4). The **factor loading** and **error variance** were equally calculated and were later hand loaded into the path diagram (see Table 4).

Table 4: Factor loading and error variance hand loaded into Amos

Indicators	Factor loading	Error Variance
Knowledge of business practice indicator (KBPI)	0.917	0.158
Psychological indicator(PSYI)	0.853	0.272
Business performance indicator (BPI)	0.963	0.072
Economic growth (EGI)	0.695	0.518
Entrepreneurship development indicator (EDI)	0.835	0.302

Down Table 5 is the model fit summary which had GFI, NFI, CFI, TLI, and RMSEA as 0.983, 0.965, 0.968, 0.838, and 0.14. Four (GFI, NFI, CFI, and TLI) out of the five fit indices were in agreement with Hu and Bentler (1998, 1999) and Kenny (2012) except for RMSEA whose value is close to 1 against the benchmark of 0.06.

From the table, the coefficient of knowledge of business practice indicator (KBPI) was positive and significant at 1% level of significance, this implies that a 1% increase in the KBPI will cause a 0.543 unit increase in the development of entrepreneurship among women in Nigeria. This was in agreement with the study of Cho and Honorat (2014); Zenobia's (2018) who identified knowledge of business practice as an agent of entrepreneurship development.

The coefficient of entrepreneurship development indicator (EDI) was positive and significant at 1% level of significance, this implies that a 1% unit increase in the women entrepreneurial ability will increase the unit of economic growth by 1.341. This finding was expected as the result was in agreement with the result of Cho and Honorat (2014) who contend that entrepreneurship development indicators acted as an intermediate variable for an outcome effect (economic growth).

Table 5: A mediation analysis

Variables			Estimate	S.E.	C.R.	P
EDI	<---	BPI	-0.034	0.04	-0.832	0.405
EDI	<---	PSYI	0.091	0.087	1.043	0.297
EDI	<---	KBPI	0.543	0.077	7.079	***
EGI	<---	EDI	1.341	0.114	11.721	***
ave_KBPI	<---	KBPI	0.917			
ave_PSYI	<---	PSYI	0.853			
ave_BPI	<---	BPI	0.963			
ave_EGI	<---	EGI	0.659			
ave_EDl	<---	EDI	0.835			

Model fit summary		
GFI	0.983	Good fit
NFI	0.965	Good fit
CFI	0.968	Good fit
TLI	0.838	Good fit
RMSEA	0.14	Not good fit

Source: Field Survey Data, 2020.

Figure 4: A mediation analysis

4.5: Mediation Establishment

The result of Table 6 reflects the result of mediation establishment used to test the three null hypotheses which state that entrepreneurship development does not mediate business performance indicators for economic growth (Ho1), entrepreneurship development does not mediate psychological indicators for economic growth (Ho2), and entrepreneurship development

does not mediate knowledge of business practice indicators for economic growth (Ho3). From the result, we fail to reject the null hypothesis one and two, while we make bold to reject the null hypothesis three. Thus, the study has established that entrepreneurship development fully mediates the knowledge of business practice indicator (KBPI) to economic growth.

Table 6: Mediation establishment

A Indicators	B a*b	C $(SE_a)^2 * b^2$	D $(SE_b)^2 * a^2$	E C + D	F $\sqrt{E}$	G B/F	H Decision rule
BPI	-0.046	0.003	0.000	0.003	0.054	-0.848	Fail to reject
PSYI	0.122	0.014	0.000	0.014	0.117	1.042	Fail to reject
KBPI	0.728	0.011	0.004	0.014	0.120	6.048***	Rejected

Source: Field Survey Data, 2020. Z-tab = 1.96 @ 0.05.

5.0 Conclusion

The study used structural equation modelling (SEM) techniques to examine the mediation analysis of entrepreneurship development on the economic growth of women entrepreneurs in Nigeria. Hypothetically, the study assumes the existence of three null hypotheses (entrepreneurship development does not mediate business performance indicators for economic growth, entrepreneurship development does not mediate psychological indicators for economic growth, and entrepreneurship development does not mediate knowledge of business practice indicators for economic growth) which we tried to uncover. Empirical reviews helped us to identify three entrepreneurship development indices as knowledge of business practice, business performance, and psychological indicators, whose target outcome is economic growth.

Data were collected from 500 randomly selected women entrepreneurs in Nigeria through an Android data collection tool known as SurveyCTO data collect, the choice of the data tool complied with Covid-19 protocols and the United Nation's guideline. Methodologically, we ran a convergent validity test of the reliability of variables that constitutes the measurement of each latent construct for internal consistency, the convergent validity test was in two parts of composite reliability (CR) and average variance extracted (AVE) where the rule of thumb by Fornell and David (1981); Brunner and Süß (2005) assumes a benchmark of 0.7 (CR) and 0.5 (AVE) respectively. This approach helped us to keep an eye on variables that are highly corrected with each other. We found that convergent validity was not established in economic growth indicator.

Discriminant validity was equally checked in-line with Hair *et al.* (2006) who contend that the AVE estimates should be higher than the squared correlation estimate between two constructs. A default explanatory factor analysis (EFA) was used to examine the discriminant validity where the study revealed that out of 10 discriminant test, only 3 was not established. In all these, we ensured that Kenny (2012); Hu and Bentler's (1998, 1999) recommended values for the goodness of fit index (GFI), comparative fit index (CFI), normed fit index (NFI), Turkey-

Lewis index (TLI) and root mean square error of approximation (RMSEA) were achieved to assure us more credible results for policy and novel contribution to literature.

Our results suggest that separating household and business income, maintaining a separate business account, stock-keeping, record-keeping, and use of ICT tools were the knowledge of business practice indicators that stimulate entrepreneurship development. Also, openness to change, desire for self-independent, team-work, and decision-making capacity were the psychological indicators that stimulate entrepreneurship development among women. Furthermore, reduced inactivity, increase in the size of the inventory, availability of market for the products, improved access to credit, and increased business savings were the business performance indicators that stimulate entrepreneurship development among women. Of all the entrepreneurship indices, our findings tend to corroborate Cho and Honorat (2014); Zenobia's (2018) indicator(s). Thus, our result calls for government and non-governmental agencies to concentrate effort in training women to become competent in such empirical areas. These above catalyzed higher formalization, improved agency over business decisions, increases in capital investment, and ownership of a business as entrepreneurship development indicators. Above all, the study revealed that these indicators under study helped the women to grow economically in the areas of contributing to personal and children school fare, reduction in financial dependence, increase in affordable health care fee, contributions to the family food budget, and increase in revenue or income.

We equally failed to reject the hypothesis one and two which states that entrepreneurship development does not mediate business performance indicators for economic growth, and entrepreneurship development does not mediate psychological indicators for economic growth. Lastly, we rejected the null hypothesis three (entrepreneurship development does not mediate knowledge of business practice indicators for economic growth) which was established at 1% level of significance. Thus, the study empirically suggests that entrepreneurship development mediates the knowledge of business practice indicator to economic growth.

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Availability of data and materials: The data for the study will only be made available on request.

Authors contributions:

CAO coded the SurveyCTO data collection tool, as well as analyzed the data. YI designed and developed the research instrument. LI reviewed and edited the work at each stage. ICE and GII conceptualized the study from introduction to analytical framework. IPO interpreted the result of the analysis.

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References:

- Addison T. (2015). Thirty years in Africa's development: From structural adjustment to structural transformation?, No wp-2015-119, WIDER Working Paper Series, World Institute for Development Economics Research (UNU-WIDER).
- Adu R., Ioannis L. and Mark B. (2019). Real exchange rate and asymmetric shocks in the West African Monetary Zone (WAMZ), *Journal of International Financial Markets, Institutions and Money*, 59, (C), 232-249
- Alina-Petronela H. (2012). Concepts of Economic Growth and Development. Challenges of Crisis and Knowledge. *Economy Transdisciplinarity Cognition*, 15(1), 66-71.
- Anju Malhotra *et al.* (2009). Innovation for Women's Empowerment and Gender Equality International Center for Research on Women.
- Anju Singh Choudhary (2015). Economic Empowerment of Rural Women Entrepreneurs in Rajasthan through Self- help Group: A Case of SAKHI. *Advances in Economics and Business Management*, 2(3); pp. 287-292.
- Ayoade, O. E. and M.E. Agwu (2015). Employment generation through entrepreneurial
- Bentler P.M. & Bonett D.G. (1980). Significance test and goodness of fit in the analysis of covariance structure. *Psychological Bulletin*, 88, 588-606.
- Bentler P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246.
- Bollen K.A. (1989b). A new incremental fit index for general structural equation models. *Sociological Methods and Research*, 17, 303-316.
- Byrne, B. M. (2004). Testing for multigroup invariance using AMOS Graphics: A road less traveled. *Structural Equation Modeling*, 11(2), 272-300.
- Cho Y. and Honorati M. (2014). Entrepreneurship programs in developing countries: A meta regression analysis. *Labour Economics*, 28, 110–130.
- Clogg C.C., Petkova E. & Shihadeh E.S. (1992). Statistical methods for analyzing collapsibility in regression models. *Journal of Educational Statistics*. Vol. 17(1):51 74.
- Dani Rodrik, Harvard University One Economics, Many Recipes: Globalization, Institutions and Economic Growth (2007)
- development: The Nigerian experience. *British Journal of Economics, Management & Trade*, Vol. 11, Issue 3. pp.1-14.
- Douglas Gunzler, Tian Chen, Paw Wu & Hui Zhang (2013). Introduction to mediation analysis with structural equation modeling. *Shanghai Arch. Psychiatry*. 25(6), 390 394.
- Entrepreneurs on Social and Economic Empowerment. *International Research Journal of Social Sciences*. ISSN: 2319-3565. Vol. 3(11), 34-37.
- Entrepreneurship.
- Fornell C. and David F.L. (1981). Evaluating structural equation models with unobserved variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fox, L., and Kaul, U. (2017). The Evidence is in: How Should Youth Employment Programs in Low Income Countries be Designed. USAID. Retrieved from https://static.globalinnovationexchange.org/s3fs-public/asset/document/YE_Final-USAID.pdf
- Golla A., Malhortra A., Nanda P. and Mehra, R. (2011). 'Understanding and Measuring Women's Economic Empowerment: Definiion, Framework and Indicators', International

- Hair Joe F., Marko Sarstedt, Lucas Hopkins & Volker Kuppelwieser (2014). Partial Least Squares Structural Equation Modeling (PLS-SEM): An Emerging Tool for Business Research. *European Business Review*, 26(2), 106-121.
- Imai, K., Keele, L. & Tingley, D. (2010). A general approach to casual mediation analysis. *Psychological Methods*, 15(4), 309-334.
- MacKinnon D, Fairchild, A. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science*. 18(16), 20.
- Magnus Henrekson and Tino Sanandaji (2014). Measuring entrepreneurship: do establish metrics capture Schumpeterian entrepreneurship. *Entrepreneurship theory and practice*, 00(0), 1-28
- Ndulu et al (2007), Challenges of African Growth, World Bank, pg 3
- Obianefo C.A., Meludu T.N, Onah O.G. (2019). Agribusiness Development on Pro-vitamin A Cassava Recipes among Female Youth in IFAD Value Chain Development Programme in Southeast Nigeria. *International Journal of Science and Research*, 8(9), pp: 1148- 1153.
- Obianefo C.A., Osuafor O.O., Ezeano C.I. & Anumudu O.O. (2020). Mediation effect of adopting good agronomic practices on rice productivity in Anambra State, Nigeria. *International journal of agriculture and Rural Development*, 23(1), 4913-4926
- Rajeshwari M. (2015). A Study on Issues and Challenges of Women Empowerment. *Journal of Business and Management*, 4(1), 13-19.
- Ravallion (2007), Inequality is Bad for the Poor, Chapter 2 in Inequality and Poverty Re-examined, ed Jenkins and Micklewright, Oxford
- Raykov, T. (2005). Bias-corrected estimation of noncentrality parameters of covariance structure models. *Structural Equation Modeling*, 12(1), 120-129.
- Schreiber, J. B. (2008). Core reporting practices in structural equation modeling. *Research in Social & Administrative Pharmacy*, 4(2), 83-97.
- Schumpeter J.A. (1934). The theory of economic development. Neo Brunswick, NJ and Londi, UK: Transaction Publisher (Original work Published 19)
- Schumpeter J.A. (1942). Capitalism, socialism and democracy. New York: Harper & Row, p. 132
- Selvi Narayanan and Bakialekshmi Selvanathan (2017). Challenges of women empowerment in a private organization in Malaysia. *International Journal for Studies on Children, Women, Elderly and Disabled*, 1(1), 90-96
- Sharifah S. (2015). Affirmative Policy Implementation and Women Empowerment in Malaysia Public Sector. *Proceedings of the Australasian Conference on Business and Social Sciences (in partnership with The Journal of Developing Areas)*.
- Smriti, C. (2020). Entrepreneurship: Characteristics, Importance, Types and Functions of
- Swetha, M., R.M. Mohan and V. Sudharani (2014). Extent of Empowerment of Women
- Zenobia Ismail (2018). *Indicators and methods for assessing entrepreneurship training programmes. Knowledge, evidence and learning for development*, p. 1-12.

Carlson K.D. and Herdman A.O. (2012). Understanding the Impact of Convergent Validity on Research Results. *Organizational Research Methods*, 15(1), 17-32.

Brunner M. and Süß H. (2005). Analyzing the Reliability of Multidimensional Measures: An Example from Intelligence Research. Retrieved November 30, 2020 from: <http://citeseerx.ist.psu.edu/viewdoc/download?>

Diamantopoulos, A., Siguaw, J.A., 2000. *Introducing LISREL*. Sage Publications, London.

Tellis, G.J., Yin, E., Bell, S., 2009. Global consumer innovativeness: Cross-country differences and demographic commonalities. *Journal of International Marketing* 17 (2), 1-22.

Hair, Jr., J.F., Black, W.C., Babin, B.J., Anderson, R.E., Tatham, R.L., 2006. *Multivariate data analysis* (6th Ed.), Pearson-Prentice Hall, Upper Saddle River, NJ.

Engellant K.A., Holland D.D. and Piper R.T. (2016). Assessing Convergent and Discriminant Validity of the Motivation Construct for the Technology Integration Education (TIE) Model. *Journal of Higher Education Theory and Practice* Vol. 16(1), 37-50.

Supplementary materials

A. Knowledge of business practice indicators: To what extent do you practice the following indicators?

Sn.	Indicators	very great extent	great extent	sometimes	not a practice	seriously not a practice
i	Use of ICT tools					
ii	Record keeping					
iii	Stock-keeping					
iv	Maintain a separate business account					
v	Separating household and business income					
vi	Improved marketing strategies					
vii	Training for improvement					
viii	insurance cover					

B. Business performance indicators: To what extent do you agree with the following?

Sn.	Indicators	Strongly agree	agree	somewhat agree	disagree	strongly disagree
i	improved access to credit					
ii	profitable venture					
iii	availability of market for the products					
iv	increase in the size of the inventory					
v	reduced inactivity					
vi	the tendency for business survival					
vii	increased business savings					

C. Psychological indicators: To what extent are you ready for the following?

Sn.	Indicators	very much ready	ready	somehow ready	not ready	seriously not ready
i	decision-making capacity					
ii	self-confidence					
iii	team-work					
iv	desire for self-independent					
v	openness to change					

D. Entrepreneurship development indicators: To what extent has the following change?

Sn.	Indicators	to a great extent	great extent	some extent	no change	seriously no change
i	ownership of a business					
ii	increases in capital investment					
iii	improved business knowledge/skills					
iv	improved agency over business decisions					
v	higher formalization					
vi	improved business practices and performance					
vii	increased market access					
viii	increase in employment					
ix	ownership of a product brand					
x	ability to access loan for expansion					

E. Economic growth indicators: To what extent has entrepreneurship development influenced your economic growth?

Sn.	Indicators	to a great extent	great extent	some extent	no change	seriously no change
i	increase in revenue or income					
ii	contributes to the family food budget					
iii	increase in affordable health care fee					
iv	reduction in financial dependence					
v	increased financial security through savings					
vi	contribute to personal and children school fare					
vii	reduced income differential among men					
viii	ability to purchase some personal asset need					

Figures

Figure 1

Default EFA for the discriminant validity.

Figure 1

A mediation analysis

Figure 1

proposed structural equation modelling of women economic growth.

Figure 1

Regression relationship between the construct and observed variables.