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Increasing Insurance Penetration In Ghana Through Inclusive Insurance: Evidence From The Volume Value Debate

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ABSTRACT

The National Insurance Commission (NIC) in Ghana is legally mandated to regulate insurance operations, focusing on the impact of insurance on the economy. However, NIC reports show insurance penetration rates of less than 2% in 2020, 2021, and 2022, compared to global and South African averages. This low penetration rate is a significant issue, highlighting the need for improved insurance coverage and regulation. Insurance in Ghana is not contributing effectively to the GDP, leading to low insurance penetration rates. The formal sector, which constitutes 20% of the workforce, is well-structured, but insurers have neglected the informal sector, which has over 80% of the workforce. This results in low insurance penetration and density compared to countries like South Africa. The National Insurance Commission (NIC) has identified micro or inclusive insurance as a tool to increase insurance penetration and density in Ghana. Initiatives aim to stimulate uptake and address challenges in this important sector. This study evaluates the impact of inclusive insurance service delivery in Ghana, focusing on insurance density, penetration, poverty alleviation, economic growth, and development, to determine the sustainability of NIC's position in increasing insurance penetration.

Findings from the time series analysis, correlational analysis, and regression analysis were provided by the quantitative data analysis. The study's correlational analysis revealed a significant positive correlation between the economic variables (GDP, population of the informal sector, and poverty reduction) and inclusive insurance (GWP). However, there was only a marginally favorable correlation between GWP and economic expansion. More than 60% of the fluctuation in GWP may be linked to the variation in the corresponding economic variables, according to the coefficient of determination (R2) between GWP and the economic variables (GDP, population of the informal sector, and poverty reduction). Conversely, there was little correlation found in the coefficient of determination between GWP and Economic Growth.

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In effect, there was consistency in results in terms of the ability of inclusive insurance (GWP) to increase GDP significantly. Inclusive insurance can increase insurance penetration in Ghana by contributing significantly to the Gross Domestic Product. This can be achieved by deepening insurance education and widening its reach. Service providers should offer simple, flexible, and affordable products to meet different sub-groups in the informal sector. Based on the results obtained, the study recommends that inclusive insurance should be prominently featured in the National Financial Inclusion Development Strategy to formalize the informal economy. Collaborations among industry players and the National Insurance Commission should expedite the licensing regime.

Key words Gross Domestic Product (GDP), Poverty Alleviation, Formal Sector, Informal Sector, Gross Written Premium

Background to the Study

The National Insurance Commission (NIC) is the body that is legally mandated to supervise and regulate insurance operations in Ghana, a power granted by the Insurance Act, 2006 (Act 724) as amended by the Insurance Act, 2021 (Act 1061). One of the major issues that NIC concerns itself with is the impact of insurance on the economy as whole. According to Padoaba, (2014), Das and Shome (2016) as well as NIC (2017), insurance penetration (contribution of gross written premium to gross domestic product (GDP)) and density (percentage of population with insurance policies) are two of the most important indicators that measure the effect of insurance on any economy. Unfortunately, NIC reports over the years show insurance penetration rates of less than 2%. For example, the rates for 2020 , 2021 and 2022 were respectively 1%, 1.07% and less than 2% (NIC Annual Report, 2021 and 2022) compared to a global average of 7.2%, 6.9% and 6.7% as well as South African averages of 13.7%, 12.5% and 11.3% over the same period (Statisca, 2023). The African average is estimated at 3%. Obviously the insurance penetration rates in Ghana remain low compared to the figures above.

The implication is that, insurance is not contributing effectively to the GDP of Ghana. The low insurance penetration rate is therefore a major challenge for the NIC and the Ghanaian insurance industry and economy. There are many reasons for this phenomenon, including the population of the economic sector been served. For example, in view of the well-structured systems in the formal sector, (e.g. good payment and collection systems) insurers in Ghana have largely focused on this sector, a practice generally referred to as the formal or traditional insurance. Unfortunately, the formal sector constitutes about 20% of the Ghanaian workforce, according to the Ghana Labour Force Survey conducted by the Ghana Statistical Service. This means that insurers are not addressing or have largely neglected the important informal sector, which has over 80% of the Ghanaian workforce. It is therefore not surprising that insurance penetration and density continue to be low as compared to countries like South Africa. It is for this reason that the Commission (used interchangeably with NIC or National Insurance Commission) has identified the provision of micro insurance or inclusive insurance (terms are used interchangeably) as one of the important tools for increasing insurance penetration and density in Ghana. Inclusive insurance broadly refers to the provision of insurance to the informal sector and special or marginalized groupings including low income sectors of the economy (Section 259 of Act 1016). In a bid to achieve this objective, the Commission has embarked on a number of initiatives aimed at providing the necessary structures and strategies to stimulate uptake of insurance, and addressing challenges associated with this important (informal) sector.

The regulator opines that historically, one of the major issues associated with the implementation of the strategy was the lack of appropriate regulatory framework for inclusive insurance. For example, previously there were no clear definition for micro and inclusive insurance in the erstwhile Insurance Act, 2006 (Act 724) (This has since been rectified through definitions provided in the current Insurance Act, 2021 (Act 1061)). Prior to the promulgation of Act 1061, the Commission attempted to correct the lack of regulatory framework by the provision of the Market Conduct (Micro-insurance) Guideline in February 2013. The document clearly spelt out such issues as definitions, key principles and criteria for a product or service to be designated as micro insurance or inclusive insurance. The Guideline also provided the basic requirements for underwriting inclusive or micro-insurance, with a cumulative objective of providing protection for micro-insurance policyholders (National Insurance Commission, 2013).

Additionally, the Regulator undertook a micro-insurance landscape surveys in 2014, partnering institutions such as CDC Consult, GIZ and the Micro-insurance Center. The research focused on both the supply side (capturing issues such as the status of micro-insurance and detailed feedback on the adoption of the Guidance) and the demand side (with focus on knowledge, attitude and perception of micro-insurance). Beyond the size of the informal sector workforce, NIC also took a number of factors into consideration in its quest to focus on increasing uptake of inclusive insurance. This included factors such as the changing demographic and socio-economic dynamics of the country. Additionally, NIC, with the support of the United Nations Development Programme (UNDP) undertook "a review of the legal, regulations and institutions to identify the gaps and opportunities in support of the development of an inclusive insurance regulatory strategy and associated roadmap" in 2023-2024.

Ghana's annual population growth rate of 2.2% and the over 50% of tech savvy youth population with prowess and agility at utilizing ever increasing mobile technology served as an important impetus. Indeed, the observable surge in the uptake of inclusive insurance in Ghana in recent times is largely attributable to the emergence of mobile technology as a viable alternative distribution channel for micro-insurance marketing. According to the National Communication Authority (the public agency in charge of mobile data and technology) the total number of mobile voice subscription as at January 2023 stood at 39,812,171 representing a mobile penetration rate of 125% for the Ghanaian population which is estimated at 30,250,461 people. Similarly, the total mobile data subscription for January 2023 was 22,756,215 representing 71.51% (National Communication Authority, 2023). Furthermore, the Payment Systems and Services Act, 2019 (Act 987) permitted the use of airtime for transaction, in addition to data use through mobile wallet. In effect, there seem to be opportunities for increase in inclusive insurance purchase and usage through the use of mobile technology.

Despite these promising developments for increasing uptake of inclusive insurance, there is however the contesting view that inclusive insurance may provide tremendous volumes leading to increase in insurance coverage or density, but the low premiums may render the efforts at using it to increase insurance penetration futile. For example, the NIC Annual Report of 2022 indicated that insurance coverage was over 44% (defined as the proportion of lives with insurance cover), but the insurance penetration (contribution of insurance to gross domestic product) was less than 2%. This conundrum is referred to as the volume-value debate of inclusive insurance, by this author.

The objective of this study was to critically evaluate and comprehensively examine the impact and effects associated with inclusive insurance service delivery in Ghana in terms of insurance density (coverage) and penetration as well as other relevant economic variables such as poverty alleviation, economic growth and economic development quantitatively. This was to adduce evidence as to whether NIC's position of increasing insurance penetration through inclusive insurance was sustainable i.e. toward the resolution of the volume-value debate of inclusive insurance.

Methodology

Primarily, insurance density and insurance penetration are quantitative in nature. Additionally, poverty reduction and alleviation as well as economic development and growth are economic attributes that can be modeled quantitatively. It was in this context that the study adopted the quantitative methodology. Quantitative techniques such as descriptive statistics, multivariate analysis (regression analysis) and inferential statistics (hypotheses testing) were used to analyse the data and to assist in proferring answers to the research questions. Theories of economics such as economic growth and development, poverty reduction and alleviation and the informal economy as well as risk and insurance, micro-insurance, insurance regulation and insurance density and penetration were utilized as fundamental theoretical underpinnings of the research.

Research Questions and Hypotheses

The relationship between inclusive insurance and economic variables namely: gross domestic product (GDP), population size of the informal economy, economic growth, economic development and poverty alleviation formed the bases for this study. On one hand, inclusive insurance may possibly impact on these economic variables. On the other hand, improvements in these economic variables could trigger an improvement on the uptake of inclusive insurance. It was for this reason that the following sets of research questions and hypotheses were used for this study:

First Research Question (RQ_A): What has been the impact of inclusive insurance (Gross Written Premium (GWP) on the five economic variables, namely: Gross Domestic Product ((GDP), poverty alleviation, economic growth, economic development and population size of informal economy?

The Sub-research questions (RQA_i) together with their respective hypotheses (H_i) were as follows:

RQA1: What has been the impact of inclusive insurance (GWP) on gross domestic product in Ghana?

$H1_0$: Inclusive insurance has had no significant impact on gross domestic product (GDP) in Ghana.

H1a: Inclusive insurance has had a significant impact on gross domestic product in Ghana. (This examined the impact of inclusive insurance and GDP to establish effect of inclusive insurance on insurance penetration).

RQA2: What has been the impact of inclusive insurance on population size of the informal sector in Ghana?

$H2_0$: Inclusive insurance has had no significant impact on population size of the informal sector in Ghana

H2a: Inclusive insurance has had a significant impact on population size of the informal sector in Ghana (This examined the impact of inclusive insurance and informal sector population to establish insurance density relationship)

RQA3: What has been the impact of inclusive insurance on poverty alleviation in Ghana?

$H3_0$: Inclusive insurance has had no impact on poverty alleviation in Ghana.

H3a: Inclusive insurance has had an impact on poverty alleviation in Ghana.

RQA4: What has been the impact of inclusive insurance on economic development

$H4_0$: Inclusive insurance has had no significant impact on economic development in Ghana

H4a: Inclusive insurance has had a significant impact on economic development in Ghana

RQA5: What has been the impact of Inclusive insurance on economic growth in Ghana?

$H5_0$: Inclusive insurance has had no significant impact on growth in Ghana.

H5a: Inclusive insurance has had a significant impact on economic growth in Ghana.

The second research question established whether the economic variables :Gross Domestic Product (GDP), poverty alleviation, economic growth, economic development and population size of informal economy collectively have influence on inclusive insurance. It was assumed that if these variables had collective influence on inclusive insurance, then improvements in these variables were likely to offer important prospects for the uptake of inclusive insurance. Therefore the Second Research question (RQ) and the relevant hypotheses were:

Second Research Question RQ_B: What is the relationship between inclusive insurance and GDP, population size of the informal economy, poverty alleviation, economic growth and economic development?

H6o: There is no significant relationship between inclusive insurance and GDP, population size of the informal economy, poverty alleviation, economic growth and economic development.

H6a: There is a significant relationship between inclusive insurance and GDP, population size of the informal economy, poverty alleviation, economic growth and economic development.

Third Research Question (RQ_C): What are the effects of the economic variables Gross Domestic Product (GDP), poverty alleviation, economic growth, economic development and population size of informal economy on inclusive insurance . The essence was that despite the possibility of a collective effect of these economic variables on micro-insurance, there could be nuances.

Sub-Research Questions

RQC1: What has been the effect of Gross Domestic Product on inclusive insurance in Ghana?

$H1_0$: GDP has had no significant effect on Micro-insurance in Ghana.

H1a: GDP has had a significant effect on Micro-insurance in Ghana.

RQC2: What has been the effect of population size of the informal sector on inclusive insurance in Ghana?

$H2_0$: There has not been a significant effect of population size of the informal sector on inclusive insurance in Ghana.

H2a: There has been a significant effect of population size of the informal sector on inclusive insurance in Ghana

RQC3: What has been the effect of poverty alleviation on inclusive insurance in Ghana?

$H3_0$: Poverty alleviation has had no significant effect on micro-insurance in Ghana.

H3a: Poverty alleviation has had a significant effect on micro-insurance in Ghana.

RQC4: What has been the effect of economic development on inclusive insurance in Ghana?

$H4_0$: Economic development has had no significant effect on inclusive insurance in Ghana

H4a: Economic development has had a significant effect on inclusive insurance in Ghana

RQC5: What has been the effect of economic growth on inclusive insurance in Ghana?

$H5_0$: Economic growth has had no significant effect on inclusive insurance in Ghana.

H5a: Economic growth has had a significant effect on inclusive insurance in Ghana.

Research Design

The study adopted quantitative research design, which uses the positivist philosophy and deductive approach of research (Saunders, Lewis and Thornhill, 2012). The research examined and evaluated the impact of inclusive insurance in relation to insurance density and penetration among other variables. In this context, existing literature (desk research) on theories of insurance and inclusive and micro-insurance, insurance regulation, economic development and growth as well as poverty reduction and alleviation were utilized to identify the relevant variables that could aid in the research and the necessary relationships worth examining.

The key variables subsequently selected were: inclusive insurance (gross written premium is a proxy for inclusive insurance), gross domestic product (GDP), poverty reduction and alleviation (represented by the number of persons below the poverty line) and economic growth and development. The selected variables and approaches had been used in previous studies such as those of Prakash and Solanki (2014), Podoaba (2015) and Das and Shome (2016). The rationale was that, while insurance penetration primarily determines the contribution of insurance or inclusive insurance or micro-insurance to GDP, factors such as those listed may influence penetration. The choice of gross written premium as a proxy for micro-insurance was attributable to the core objective of the research. Primarily, insurance penetration is quantitative in nature. Additionally, poverty alleviation and economic development are economic attributes that can be modeled quantitatively. It was in this context that this study adopted quantitative research design.

The research which was non-experimental in nature, basically used the survey (using questionnaire) research strategy in addition to desk research. According to Sanders et al., (2012), this strategy was apt because it gave the researcher the opportunity to collect data quantitatively. This data was subsequently analyzed using techniques such as inferential statistics. Kwabi (2006), posits that survey (with questionnaires) is an important data collection method for deductive (positivist paradigm) researches (such as the one being currently undertaken). In the context of this research, questionnaire was developed to solicit primary data from identified participants.

The questionnaire was developed based on discussions with practitioners/experts, researchers and review of literature. The questionnaire took into consideration the main issues raised in the research questions such as gross written premium and factors such as economic development, poverty alleviation and economic growth. Individual participants/respondents were given opportunities to complete the questionnaires on their own. However, the researcher was at hand to assist in clarifying issues to the participant/respondent whenever the need arises. Some other participants were interviewed using structured questionnaires.

Population

The general population for the research was group of all inclusive or micro-insurance service providers in Ghana; however, stratified random sampling was used as suggested by Shi (2015). Stratified random sampling was apt because of its ability to handle heterogeneous population of these service providers, with varying interests effectively. For example, NIC was interested in the supervisory and regulatory aspects of inclusive operations, as compared to direct operators who were interested in operating inclusive insurance at a profit. Obviously, there was the need to reduce the heterogeneity and this was achieved through the use of schemes such as stratified random sampling. According to Sharma (2017), this ensured that selected samples were largely representative of the population being studied. The overarching objective was to generally increase the precision of the estimator of the population parameters, which in this case was defined as gross written premium (GWP) for inclusive insurance for reliability in establishing relationship with gross domestic product (insurance penetration).

There were five strata of sub populations namely:

(1) inclusive insurance companies,

(2) insurance companies with inclusive insurance operations (as departments) and

(3) other relevant organizations in the Ghanaian micro-insurance service delivery value chain (such as the NIC and GIZ) as well as

(4) Past and present practitioners of inclusive insurance and

(5) Past and Present recipients of inclusive insurance service.

The selected organisations were experienced inclusive insurance service providers which answered the questions objectively. Additionally, data from such institutions provided meaningful insights into inclusive insurance operations.

Sampling Strategy

According to NIC (2015), there were 13 Micro-insurance companies (Enterprise Life, Star-micro, GLICO-Life, GUA Life, Vanguard Life, Donewell Life, Unique Life (Beige Assure), UT Life (MiLife), Phoenix Life, Prudential Life, Ghana Agricultural Insurance Pool (GAIP), Old Mutual, SIC Life). However a number of Micro-insurance oriented institutions were relevant. These included: Micro-ensure, National Insurance Commission (NIC), German Development Cooperation (GIZ), BIMA, MTN (operators of AYO), Airtel-Tigo, Union of Informal Workers' Associations (UNIWA) and the Insurance Brokers Association of Ghana (IBAG). An estimated average of five persons from each of these institutions was used in the research. Additionally, individuals such as researchers, consultants, past and present Micro-Insurance Practitioners were used. It was therefore estimated that over 250 participants would take part in the research. Factors such as the level of knowledge in Micro-insurance operations, ease of access and willingness of participants were key considerations and hence convenience sampling was applied. In view of the structured institutional approach adopted The response rate was 85%.

The study covered the period 2000-2019 which was appropriate because it captured the periods before and after the promulgation of the Market Conduct (Micro-insurance) Rules by the NIC. This was further complemented by data for the period 2021 to 2023 representing the period post promulgation of the new Insurance Act, 2021 (Act 1061) which provided specific sections for inclusive insurance. Unfortunately, the Regulation (as directed in Act 1061 to operationalize the law) which could have further aided the research had not been passed and was therefore not included.

One major objective of the research was to add to the body of knowledge in inclusive insurance operations and insurance penetration in general. Therefore using respondents who had not only been involved in high level inclusive insurance operations but are also interested in the outcome of such a study was very relevant and important. With permission from the NIC, insurance companies and specific individuals with adequate knowledge from organisations involved in inclusive insurance operations were interviewed and primary data collected from these sources. It was expected that interest in the research value of the study would engender cooperation from these respondents.

Additionally, secondary data from insurance industry documents were collected and analyzed. These included NIC Reports, Corporate Annual Reports, Reports from the Ghana Statistical Service as well as reports on the economy and other institutions both local and foreign. The study complemented the quantitative data with qualitative information for in-depth discussions and further insights. While quantitative study was predictive in nature, qualitative information assisted in determining how the end results could be achieved. This explained the need to seek clarifications from respondents qualitatively.

Research Instrument

This research work used five validated instruments, which were classified according to the various strata of groupings used. The research sought to examine the relationship between inclusive insurance and a number of economic variables. While obtaining historical values for these economic variables (such as GDP, economic growth etc.) was largely dependent on secondary data available at sources such as the Ghana Statistical Service, data on inclusive insurance were obtainable from the service providers and the regulator as well as consumers and others.

It was for this reason that validated instruments (questionnaires) were developed for the various stakeholder groupings as follows: specialized inclusive insurance companies, traditional insurance companies with insurance department, consumers, regulator and others. These instruments took due cognizance of the various components of micro-insurance and the Guidelines issued by the Commission for regulating same, including the Bancassurance Guidelines, Mobile Insurance Conduct Rules, Market Conduct (Micro-insurance) Guidelines and Agricultural Insurance as well as provisions in the Insurance Act, 2021. Additionally, reports from the Ghana Statistical Service and the NIC were also utilized.

Validity and Reliability of research instrument

Validity and reliability are two of the most important attributes that a research must have for it to effectively and efficiently address the research questions. Validity refers to the level at which a data collection method is able to measure what it was originally intended to measure accurately. It thus measures the ability of the research findings to mimic what it was originally intended as its substance.

On the other hand reliability is an attribute of a data collection technique(s) to consistently churn out the same result, findings or conclusions when used in the same way (Saunders et al., 2012). The primary instrument for the study was a questionnaire, which had to be validated and tested for reliability through a number of steps. Collingridge (2014) posits that questionnaires can be validated through initially conducting face validation using a team of experts on the subject and a psychometrician (to check for errors in the questionnaire). Additionally, pretest/pilot survey which must then be cleaned by inputting the data into a spreadsheet (e.g. SPSS software) and identifying common or data entry errors. Principal component analysis and check for internal consistency (e.g. using Cronbach's Alpha test) completed the process. These processes were undertaken to ensure validity and reliability of the questionnaire.

Instrument Validation

The process suggested by Venkitachalam (2015), formed the basis for validation of the instrument. As a first step, face validation was conducted to determine the extent to which the instrument could be utilized to achieve the specific objective of the research. The critical areas of concern (in terms of face validation) were readability, feasibility and wording clarity as well as layout and style. This was achieved by, contacting three practitioners (present and past) to proofread the questionnaire, and critique the instrument in terms of: readability, feasibility, wording clarity, layout and style.

The instruments were amended based on the feedback from the experts. However, Varneka (2018) argues that face validity is highly subjective and may have biases. Hence, Venkitachalam (2015), suggests that Content Validity should be conducted subsequently, to ensure the full relevance of the content to the domain of the research. A Content Validity Index (average and universal agreement) is constructed and used as basis for establishing whether or not the instrument (questionnaire) is valid.

In the context of this research, a Content Validity Index (CVI) was constructed by using a panel of 11 experts to review the questionnaire on a 4 point Likert scale with the following designations:

1-Not Relevant,
2-Somewhat Relevant,
3-Relevant and
4-Very Relevant.

For each question number a score of 1 or 2 was interpreted to mean that the question was not relevant while a score of 3 or 4 was interpreted to mean that the question was relevant. Individual Content Validity (I-CVI) as well as the Overall Content Validity Index (S-CVI) was computed. S-CVI/Universal agreement was then computed and defined as the proportion of items on a scale that achieves a rating of 3 or 4 by all experts. On the other hand, S-CVI/Average of the I-CVI's for all items on the scale were also computed. A mean expert proportion of 0.9 was interpreted to mean a valid instrument. Internal Consistency of the instrument was measured by computing Cronbach's alpha. A Cronbach's alpha value of a minimum of 0.7 was interpreted to mean that the instrument was reliable. A sample of the questionnaire/letter to experts in respect of validity, is presented in Appendix P.

Data Collection Procedures

The research upheld at its core, ethical and professional values and principles throughout the study. According to ethical guidelines of the British Association of Social Work (BASW, 2014), these were espoused through virtues such as integrity, treating people with compassion, empathy and care. The research also adopted the American Psychology Association's (APA, 2017), guide, that encourages important virtues. Therefore, the study contained a statement assuring participants and other respondents that data collected was used solely for this research in the context of strict confidentiality, and making them aware of the risks and benefits. Sun (2011), also attests to the relevance of these virtues for research.

A letter to the respective institutions of respondents detailed the essence of the research and further gave assurances on ethical issues. These were communicated in a non-complex language that was clearly understood by the recipients in terms of context and objective. It must be noted that the value of the study did not only lie in

its contribution to the body of knowledge in area of micro-insurance. The study had empirical value for service providers, practitioners and regulators as well as policymakers such as governmental institutions. Ethical considerations in research derived from the fact that researchers may face dilemma in a number of situations.

However, in all situations they must be guided by basic concepts that ensured that decisions and actions inure to the benefit of society at large. According to Ling and Hauck (2016), the Ethics Model, as an example, professes that researchers and practitioners such as counsellors in every situation must be guided by the following steps: evaluation of the dilemma, thinking ahead, seeking information, calculating risk and selecting action. Similarly, Resnik (2015), posits that, the essence of most researches is to promote important societal and moral values. These noble objectives can be achieved through upholding key ethical principles such as honesty, objectivity, carefulness, openness and confidentiality.

The study comprised collection of primary and secondary data. In terms of the primary data, questionnaires served as the main instrument. These were generally completed by respondents, but in view of the fact that there could be consumers who may not be able to read/write, some of the questionnaires were completed by the researcher based on the responses from respondents concerned. Additionally, the questionnaires were complemented by interviews (using the questionnaire as the interview guide) in cases where further clarification was required.

Due to cultural biases in Ghana, it was difficult to conduct research and solicit responses online. Therefore the research instruments were delivered and respondents given approximately 30-40 minutes to complete the questionnaire at an agreed convenient time and place (of the researcher and respondent). However, some of the participants were contacted via e-mail and the same medium used for receiving responses.

Overall the risks associated with the following procedures were minimal:

a) Initial contacts with Micro insurance service provider and other participants (minimal)
`b) Data collection procedures (minimal)
c) Data management procedures (confidentiality breach): minimum
d) Data analysis procedure (confidentiality breach): minimum
e) Write-ups/presentation (confidentiality breach): minimum

Participant had the right not to answer a question that he or she was not comfortable with or deemed unethical. Each participant reserved the right to withdraw at any time during the interview without any reasons regarding the withdrawal decision. Representatives of participating firms were not penalized for their decisions to withdraw (e.g. based on complaints to superiors by the investigator). Reponses were treated with utmost confidentiality. Pseudonyms were used and the identity of respondents were not revealed to third parties during the final write-ups and summaries. Retention of original tapes and transcripts were important. For example, according to Park (2006) it was necessary to keep those materials prior to assignment of pseudonyms and this was done in a locked file cabinet at the workplace of the primary researcher.

These measures were in line with principles enshrined in the code for psychologists by APA (2017) such as follows:

1. Ensuring the study benefits those associated with the work (Principle A: Beneficence and Non maleficence).
2. Maintaining trust with participants (Principle B: fidelity and responsibility)
3. Promoting accuracy, honesty and truthfulness (Principle C: Integrity)
4. Justice and fairness (Principle D: Justice) and
5. Respecting the right and dignity of persons including right to privacy, confidentiality and self-determination (Principle E: Respect for people's right and dignity).

Informed consent was therefore, the starting point of participating in the research and the respondent only took part in the research once this important requirement was obtained.

Data Analyses

The research adopted the positivist approach (as the quantitative methodology). According to Jankowicz (2000) this posits the scientific method (hypothetico-deductive method) for arriving at the truth. The study in essence examined the relationships between the key variables identified in the research questions namely inclusive insurance (gross written premium is a proxy for micro-insurance), GDP, poverty alleviation (represented by the number of persons below the poverty line), population size of the informal sector, economic growth and economic development. According to Kwabi (2006) the scientific approach enabled a comparison between the observed results and the predictions of the stated hypotheses. This enabled conclusions to be drawn as regards the relationships between the variables.

The scientific method was adopted by first and foremost stating the hypotheses (null and alternative) associated with each of the research questions. An appropriate significance level was selected (5%), a t-test or an F-test conducted for each of the hypothesis and conclusions drawn based on the outcome of the test. For example, the following steps were adopted for answering the first Sub-research question:

What has been the impact of micro-insurance on gross domestic product in Ghana? (This was formally expressed as the potential to explain the impact of micro-insurance on GDP).

H_0: Micro-insurance has had no impact on gross domestic product

H_1: Micro-insurance has had an impact on gross domestic product.

These hypotheses tend to state that there could be a relationship between the two variables (inclusive insurance and gross domestic product). Gross written premiums (the adopted operational definition for inclusive insurance) and GDP were measured in order to observe the exact relationships between the variables in the hypotheses. The above statements were then subjected to the requisite hypotheses testing procedures and conclusions and implications drawn.

The research entailed the use of both primary and secondary data. The reason was that primary data may be collected from specific organisations and is representative of data that are peculiar to such organisations. On the other hand, secondary data may be related to the insurance industry and the economy as a whole. The combination of these types of data enabled the researcher to develop the relevant models for multiple regression testing.

With permission of NIC, insurance companies and specific individuals with adequate knowledge in micro-insurance, primary data were collected from these sources. Additionally, secondary data from insurance industry documents would be collected and analyzed. These include NIC Reports, Corporate Annual Reports, Reports from the Ghana Statistical Service as well as reports on the economy and other institutions both local and foreign. Descriptive statistics, multivariate analysis (regression analysis) and inferential statistics (hypotheses testing) were conducted with view to answering the research questions.

Descriptive Statistics

According to Kaur, Stolfzfus and Yellapu (2018), descriptive statistics presents the first critical step in research and should be undertaken prior to conducting inferential analysis. The essence is to measure factors such as frequency, central tendency (mean, median and mode) as well as dispersion (variation, standard deviation). According to Sun (2011) and Triola (2009), the use of descriptive statistics ensured that the data is not skewed and that it satisfies the basic requirement of normal distribution. This underpinned the decision to use descriptive statistics.

Regression Analysis (Correlational Analysis)

The study sought to understand the relationships between economic variables. According to Kumari and Yadav (2018), regression represented one of the effective tools for establishing such relationships among variables. In view of the fact that there were individual and collective relationships to be established, simple linear regression as well as multiple linear regression were conducted using software such as GPower, Eview and SPSS Software as well as Excel. Simple linear regression was run to obtain the relationships between inclusive insurance and the individual variables (economic development, economic growth, population size of the informal sector, poverty alleviation and GDP) and vice versa. A multiple linear regression was also run between inclusive insurance and the variables collectively as in Table 3.1.

Table 3.1

List of Pairings of Economic Variables for Regression Analysis

Research Question	Dependent Variable	Independent Variables
RQA1	GDP	Inclusive insurance
RQA2	Pop. Size	Inclusive insurance
RQA3	Pov. Alleviation	Inclusive insurance
RQA4	Eco Dev	Inclusive insurance
RQA5Eco.	Growth	Inclusive insurance
RQB	Inclusive insurance	GDP, Pop.Size, Pov.All., Eco.Devt. Growth
RQC1	Inclusive insurance	GDP
RQC2	Inclusive insurance	Population Size
RQC3	Inclusive insurance	Pov. Alleviation
RQC4	Inclusive insurance	Economic Development
RQC5	Inclusive insurance	Economic Growth

y is the dependent economic variable;
x is the independent economic variable
$ß_0$, $ß_i$ are regression coefficients (parameters)
Ɛ is the error term.

The generic model for multi regression is $y = ß_0 + ß_1 x_1 + \ldots + ß_n x_n + Ɛ$ (where symbols have their usual meanings). Regression analysis entailed the running of the respective regression models as well as the interpretation of the outputs. Specifically, the following were interpreted within the context of this study: elements of the Regression Summary such as multiple correlation coefficients squared, multiple correlation coefficients and standard errors of estimate. The data was tested to find out if it satisfied the basic assumptions underlying regression analysis namely linearity, homoscedasticity and independence of errors, normality, absence of multi collinearity (for multi linear regression) and lack of 'outliers'. Hickey, Kontopantelis, Takkenberg and Beyersdorf (2019), suggest that these tests must be conducted to improve the efficiency of the regression model (simple linear or multiple linear regression equations respectively). The regression coefficients and other relevant output factors illustrated in Table 3.2 were tested in accordance with the rule of thumb and decision rules set during analysis.

Table 3.2

Summary Output: Regression Statistics

Regression Statistics	Interpretation
Multiple R	Strength and direction of relationship between dependent/independent variables.
R Square	Percentage of variation in dependent variable due to changes in independent variables.
Adjusted R Square	R Square adjusted for number of independent variables.
Standard Error	Measurement of the variability in the predicted scores.
Regression Coefficients ($ß_i$)	Dependent Variable increase per unit increase in independent variable.
Constant ($ß_0$)	Value of dependent variable for zero independent variables.

Error /Residual	Difference between predicted values and actual values.
Bivariate Regression /Simple linear Regression	Only one independent variable
Multiple Linear Regression/ Multi-Linear Regression	Two or more independent variables

Source: Starstedt and Mooi (2014)

Inferential Statistics (Hypothesis Testing)

Based on the one-way Analysis of Variance (ANOVA) output from the Regression run, the hypotheses testing procedure adopted is shown in Table 3.3

Table 3.3

Hypotheses Testing Procedures for Regression

Step	Statement	Details
1	Hypotheses	H_0 : $ß_0 = ß_1 = ß_2 = \ldots = ß_k = 0$ H_a : At least one $ßi \neq 0$ (i = 1, 2,3 …..k)
2	Level of Significance	α = 5%
3	Test Statistic	3 (t or F) $t = (b - ß_0)/s_b$, $df = n-(k+1)$ Or $f=(SSR/k)/(SSE/[n-(k+1)])=MSR/MSE$ $df_1 = k$, $df_2 = n-(k+1)$
*SSR = Regression Sum of Squares; SSE = Sum of Squares of Error, MSR =Mean Sum of Squares of Regression ; MSE= Mean Sum of Squares of Error; n= total samples (Observations); df = Degrees of Freedom, k = Number of Independent Variables		
4	Decision Rule-Reject H_0 if $f \geq F_{5\%, df1, df2}$ Or : Reject H_0 either if $t \leq t_{2.5\%, df}$ or $t \geq t_{2.5\%, df}$	
5	Computations: Obtained from ANOVA of Regression Summary	
6	Decision: Comparison of the computed value (t or f) and read value	
7	Conclusion: Whether or not there is significant relationship between variables.	

Summary and Expected Findings

The study sought to examine the relationships between key variables such as the gross premium of inclusive insurance and GDP. Therefore, descriptive statistics, multivariate analysis (regression analysis) and inferential statistics (hypotheses testing) were appropriate for analyzing research results by testing the relevant hypotheses, with view to answering the research questions. Similar studies in insurance penetration conducted by Prakash and Solanki (2014), Podoaba (2015) and Das and Shome (2016) used these quantitative techniques, including inferential statistics for the analysis.

The basic assumptions underlying the use of regression analysis (simple linear and multiple) were tested to check for the suitability of the data and the use of the technique for the research. Specifically, there were tests for linearity, homoscedasticity and independence of errors, normality, absence of multi collinearity (for multiple regression) and lack of 'outliers'. Hickey et al.(2019), suggest that these are very necessary for efficiency of model and results of the study. It was therefore expected that the overall fit of the various regression models as measured by the coefficient of determination (R^2) and by extension the adjusted R^2 will be good.

Coefficient of determination (R^2) measures the percentage of the variation in the dependent variable attributable to variations in the independent variables. The adjusted R^2 similarly behaves like the coefficient of determination except that it will normally be lower and more effective. According to Khot (2019), R^2 and adjusted R^2 normally lie between 0 and 1 and are indicative of whether or not the independent variables were well chosen. It was generally expected that the values of the coefficients of determination would be higher (i.e. closer to 1), in view of the rigorous validity and reliability processes undertaken with respect to the data.

On the other hand, the multiple correlation coefficient (R) indicates the strength and direction of the association between the dependent and independent variables, taken as a whole. R lies between -1 and +1 (both inclusive). It was expected that there would be a strong positive relationship (i.e. over 0.8) between the dependent and independent economic variables (taken together). The standard error of the regression represents the precision with which the regression coefficients are measured, as well as the predictive value of the regression line. A lower value was indicative of a cluster of observations near the line. In view of the objective of examining the extent to which the dependent variable may be estimated from the independent variable(s), its interpretation was vital to the study. According to Frost (2019), 95% of observations were expected to be within two standard error and represents about 95% of prediction interval.

The study entailed hypotheses testing of the respective regression coefficients of the regression runs. Based on the enumerated steps and the one way ANOVA outputs, an F test was conducted to evaluate the significance of the model as a whole. However, t-tests were also conducted to examine whether or not significant relationships exist between the dependent and independent variables individually. In line with the choice of level of significance and other parameters for the computation of the minimum number of subjects required for the study, the power of the test was assumed to be 0.8 with a level of significance of 5% or confidence level of 95%. The critical value for rejection for the F test was 2.42. On the other hand, the rejection region for the t-test was 1.96. Thus computed F and t values that within these boundaries led to rejection of the null hypotheses and an accession of a significant relationship between the dependent and independent economic variables under study. These figures were varied whenever the need arose.

Previous studies on inclusive insurance and economic variables showed important relationships. For example, Dash et al. (2010), posit that there could be unidirectional and bidirectional causality between insurance market penetration and per capita economic growth in the Eurozone region, although they might be non-uniform. On the other hand, Das and Shome (2016), argued for positive relationship between insurance penetration and factors such as life expectancy and labour productivity. These in turn were useful links to factors such as economic growth, economic development and poverty alleviation. Padoaba (2014), argue that insurance density and penetration are the most important indicators for measuring the effect of insurance on the economy. It is also interesting to note that Axman-saim and Smith (2010) provide novel evidence of the impact of insurance on key macro-economic variables such as output growth, capital accumulation and productivity. Similar results were expected except that there could be sporadic deviations.

Summary of Results

The quantitative data analysis presented a number of results in terms of the correlational and hypotheses/regression analysis, as well as the time series analysis. In terms of the correlational analysis, the study showed a strong positive correlation between inclusive insurance (GWP) and the economic variables (GDP, informal sector population and poverty reduction). On the other hand there was a weak positive relationship between GWP and economic growth. The coefficient of determination (R^2) between GWP and the economic variables (GDP, informal sector population and poverty reduction) showed that over 60% of the variation in GWP could be attributed to the variation in the respective economic variables. On the other hand coefficient of determination between GWP and Economic Growth was insignificant. The results of the hypotheses testing showed that apart from Economic Growth, the other economic variables (GDP, Informal economy population, poverty reduction) had a significant relationship with inclusive insurance (GWP).

Since the data was a time series, it was further subjected to a time series analysis. Diagnostic tests were conducted for multi-collinearity, stationarity and heteroscedasticity, as well as auto-correlation. These are assumptions underpinning regression analysis whose violations may be fatal to the eventual model developed. Multi-collinearity was established between GDP and Poverty Reduction/Informal Sector Economy (Population).

Relying on the assertions of Yoo et al.,(2014), Brock (2020) and Schreber-Gregor (2017), these variables were dropped since their presence would have invariably affected the effectiveness and efficiency of the model.

Initial Augmented Dickey-Fuller and Phillip-Perron tests showed the variables GWP, GDP and Economic Growth not to be stationary. Further tests of difference in line with Gagniuc (2017), showed GDP and Economic Growth to be stationary at the first order and GWP to be stationary at second order Using the Jarques-Bera test, the residuals were found to be normal with p-values of 0.593. Similarly no heteroscedasticity was established using the Breusch-Pagan-Godfrey test (Frost, 2020; Vijayakumar, 2019) and no autocorrelation was established either using the Breusch-Godfrey serial correlation test (Arowolo, Adewale and Kayode, 2016; Kings and Giles, 2018; Wozniak, 2019). Engle-Granger and Phillip-Oularis co-integration tests to examine the existence of long-run equilibrium (relationship) among the variables showed that there was no such relationship (Xie, Zhu and Xu, 2019). The Vector Auto Regression analysis (VAR) showed that the variables were not significant (interdependent) at the 1st order but were significant at the 2nd order (Rossi and Wang, 2019).

A Granger causality test to determine causality between the variables showed that GDP does not Granger cause GWP but GWP Granger caused GDP. In view of the multi-collinearity of some independent variables (Informal Sector Population and Poverty Reduction) these variables were used as instrumental variables in a two stage least test to identity the most suitable regression model using the ordinary least test (Maydeu-Olivaires, Shi and Rossel, 2019; Moffatt, 2020). Using informal sector population and poverty reduction as instrumental variables, a significant relationship was found between GWP and GDP in the resultant regression from the two stage least square analysis.

In effect, there was consistency in results in terms of the ability of inclusive insurance (GWP) to increase GDP significantly whether the data was subjected to the more rigorous time series analysis or not. However due to multi-collinearity (a clear violation of the assumption of no relationship amongst the independent variables) the data needed to be modified to ensure that an effective regression model is derived.

It is therefore concluded that, inclusive insurance can be used as a tool for increasing insurance penetration and this can be achieved if gross written premium from inclusive insurance is relatively high as to significantly contribute to the Gross Domestic Product of Ghana. The extent to which this can be achieved is dependent on a number of factors. These include deepening insurance education and awareness in general and inclusive insurance in particular, and would necessarily entail widening its reach.

In view of the characteristics of the target population, it is important for service providers to offer alternative solutions to meet the different sub-groups within the informal sector, with simple products and contracts as well as flexible and affordable premiums. Innovative products that are widely distributed across the informal spectrum provide an opportunity to increase the reach and uptake of inclusive insurance in the informal sector. Inclusive insurance needs to feature prominently in the National Financial Inclusion Development Strategy (NFIDS, 2019) as efforts are made to formalize the informal economy of Ghana.

There is the need for potential policyholders to have confidence in insurance in general and prompt payments of legitimate claims, increase in knowledge and understanding of inclusive insurance as well as making insurance the Ghanaian way of life are critical. These could be achieved through collaborations among industry players. The National Insurance Commission must expedite the inclusive insurance licensing regime to allow for low minimum capital requirement and provide one compulsory inclusive insurance product through lobbying government to amend Act 1061.

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