Investigation into the Use of Big Data and Analytics in Ghanas Insurance Industry

Kevin Kwasi Anno Firempong-Boakye,[1]
Diego Navarra[2]

[1] University of Essex, Colchester, United Kingdom of Great Britain and Northern Ireland
kwasianno@yahoo.com
[2] Studio Navarra, London, United Kingdom of Great Britain and Northern Ireland
diego@studionavarra.co.uk

Abstract This paper investigates how big data and analytics in Ghana's non-life insurance industry is being deployed. Although the deployment of big data and analytics is widespread in the global insurance space, little is known about its role in the decision-making process in Ghana's rapidly growing and highly competitive insurance market. The methodology is informed by the success of many large global insurance organizations in leveraging big data and analytics and through a mix of interviews and surveys. Qualitative research design underpinned by interpretivism was applied in this study to investigate the deployment of big data and analytics in Ghana's non-life insurance industry. The study reveals that Big data and analytics in Ghana are found to be still emerging and mostly limited to descriptive and reporting purposes, although some are found to be making important strides towards more advanced analytics usage. Big data in insurance can pave the way for AI and data driven decision making to be used to reduce insurance risk, increase food security, and enhance organisations adaptiveness to uncertain environments while improving climate resilience and promoting more sustainable cities and communities.

Keywords:
big data, analytics, insurance industry, sustainable development goals, Ghana

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1 Introduction

Discussions around the use of big data and analytics are prominent in advanced economies. However, little is known about the situation in the emerging digital markets in Sub-Saharan Africa. Within the African continent research on big data has focused on South Africa, which is considered more technologically advanced than most African nations (Sekli and De La Vega, 2021and Kruger et. al., 2014). Studies on big data and analytics use in Ghana have focused on its application in disciplines other than insurance. For example, Yeboah-Boateng and Nwolley's (2018) and Dzandu (2019) analyse its use in marketing whilst Awuah, et. al (2021) study focuses on public sector business. Ghana's non-life insurance industry and related regulatory initiatives to digitally transform the Ghanaian industry to drive insurance penetration, have not yet been studied and this is the research gap this paper aims to fill.

Therefore, the research questions this study will focus on is: how is big data and analytics being deployed in Ghana's non-life Insurance Industry? Big data can pave the way for AI and data driven decision making to be used to reduce insurance risk, increase food security, and enhance organisations adaptiveness to uncertain environments while improving climate resilience and promoting more sustainable cities and communities (Navarra, 2022). The next section will review the literature, followed by the methodology. Next, we discuss the findings followed by the conclusions.

2 Literature Review

In contrast to findings from Europe, America, and Asia, where big data and analytics is deployed out of necessity to remain competitive (Benfeldt et. al., 2020; Huang, 2019), Yeboah-Boateng and Nwolley's (2018) find that, the motivation to deploy big data and analytics across businesses in Ghana is dependent on the personality and biases of the organisations leadership.

Generally, Yeboah-Boateng and Nwolley's (2018) findings show that there is overall recognition of the importance, risks and demands of big data amongst various business stakeholders, thus, suggesting appreciable level of knowledge on the central role big data and analytics is taking at global level. Yeboah-Boateng and Nwolley's

(2018) study however focuses on Ghana's SME industry. Unlike Ghana's insurance industry, Ghana's SME industry is highly informal and characterised by low or non-existent corporate governance and small capital (Osei-Boateng and Ampratwum, 2011; Mintah and Darkwah, 2018). Given the differences in the characteristics of Ghana's SME sector and the insurance industry, it is perhaps hasty to assume findings from such a highly irregular sector represent the state of business operations in Ghana especially the non-life insurance industry which is much more capital intensive.

Afful et. al., (2018) provide a Ghanaian perspective on the concept of big data. They find that, until recently, companies in Ghana had failed to fully realise the usefulness of big data analytics, largely due to the lack of knowledge and limited penetration of supporting technologies. Their findings corroborate Dzandu (2019) key findings of a general lack of adequate know-how with the use of various analytics software/tools by employees. Afful et. al. (2018) also finds that, organisations in Ghana recognise that they possess valuable assets, capable of providing them with a wealth of knowledge to improve efficiency and productivity in their large data sets.

Ghana has great potential for employing big data and data analytics and is a heaven for tech businesses, with tech companies including Google and Twitter, opening offices locally. Ghana's insurance industry employs about 15,000 people, consists of 23 Insurance Companies, 90 Insurance Brokers, 5 Reinsurance Brokers, 4 Reinsurance Companies and over 6,000 tied and independent agents. Research results suggest that organisations are less mature in their analytics beyond reporting, and that heavy spreadsheet use may be holding back advanced insight generation to support business growth. Big data and analytics in Ghana is found to be still emerging and mostly limited to descriptive and reporting purposes.

3 Methodology

Qualitative methods underpinned by interpretivism was applied in this study to investigate the deployment of big data and analytics in Ghana's non-life insurance industry. The study further infers the preparedness of industry players to support the digital transformation agenda by the local regulator, against the premise that the strategic deployment of big data and analytics promotes business efficiency and supports growth.

By employing constructivism, the researcher draws on the flexibility of interpretivism to observe, document, and investigate subtilties of learners experience through interviews and surveys. This study deploys a non-probability sampling design, which combines the quota and purposive sampling techniques. The quota technique is used to collect data from participants touted to have a greater understanding of the phenomenon being studied. The purposive technique is used to collect qualitative data from executives. This mix is deemed critical to obtaining information rich data that represent the different realities experienced by different levels of employees in an organisations deployment of big data and analytics. 4 participants were selected for the qualitative methods part of this study. The sample size was guided by Creswell's (2013) guiding principle of not more than 4 or 5 participants in qualitative studies.

4 Results and Discussion

The study reveals that, delivering operational efficiency and executive management insight is the most important benefit sought from big data and analytics. From literature, analytics can improve the ability of users, to explore and customize views that are relevant to their analytical processes. These benefits are noted to lead to greater operational efficiencies hence, it is of little surprise that they rank highest in importance for many non-life insurance organisations in Ghana. For example, one executive made the following comment:

For us, data and analytics is supposed to support the bottom line. Our portfolio managers should be able to easily interact with information to diagnose the root cause of a situation and take corrective measures, preferably in real-time to improve performance or address customer concerns. since we started building dashboards with QLIK, we can consolidate information more easily to identify why a branch like Tamale was not performing.

These are the types of insights we expect to see across other workgroups with such programmes.

The study further finds that, analytics in most organisations, is used primarily to measure, track, and compare business performance against certain key performance indicators, including prior year performance. As such, investment in analytics is

seldom tailored towards predictive analytics as seen in more analytics mature environments like Europe, America, and South Africa.

A senior executive from a market leading insurer made the following comment:

The organisation is very much aware of the benefits of analytics, which is the reason why we are relentless with our plans to continue analytics development. To be honest, it is not as though we were not aware of the benefits associated with the use of analytics, the difference now is that we are pursuing various plans to collect customer data through our new CRM tool from the group.

This should give us greater information, especially when looking to develop products and pursing certain marketing angles.

Considering that a key characteristic of big data is its collation from various sources, one may ask if the data used in decision making in Ghana may even be considered as big data. Nonetheless, the reliance on a single data source, especially organisational data is found as a key reason as to why big data and analytics is being deployed in descriptive and reporting capacities. Organisations simply do not have access to the variety of data to discover subtle patterns capable of transforming their business models. For example, in budgeting and forecasting, external data is hardly considered. Essentially, the impact of external risk factors on the business is usually not adequately catered for.

Findings reveal that whilst integration of analytics with core business applications ranks high on the wish list of many organisations, they have simply not found enough success in this area to suggest imminent positive results in achieving data-oriented goals. According to findings the prevalence of legacy technologies which do not promote knowledge sharing is a major driver for the lack of success. It is perhaps little wonder as to why users find little success or satisfaction in their big data and analytics journeys.

Big data can bring several potential benefits, however research on their adoption in the case of the insurance industry in Ghana shows the risk of a potential clash between traditional and data driven models as the latter require customer feedback mostly ignored by the former. Lack of policies to support adoption of big data, AI & smart technology makes it difficult to attract investment opportunities in big data

infrastructure leading to a catch 22 situation where critical data gaps affect policy & KPIs delineation, performance, monitoring, and feedback to measure progress towards the achievement of Sustainable Development Goals (Navarra, 2022).

5 Conclusions

While this study acknowledges the significant developments around the topic of big data and analytics especially within the insurance space, it shows how different the story in Ghana's context is. The paper adds meaningfully to the body of literature on the progressive development of big data and Analytics in insurance, especially within the Sub-Saharan region. Data-driven insights has been a key difference maker between an organisations competitiveness and passiveness in the last few years, with greater influence expected going forward. Simple facts such as knowing about digital literacy levels within the boundaries of big data and analytics use, can be the basis for more assertive strategic decisions for business leaders, regulators, and investors with interest in Ghanaian and similar markets in consideration of Sustainable Development Goals.

Implications of the findings of the study include the following:

- The introduction of accessible executive training programs and data visualization tools to support data driven decision making should be integrated in insurance industry practice
- Data 'producers' should be involved while devising policies and incentives that acknowledge and incorporate feedback mechanisms based on well-conceived data structures and data analytics platforms that can then delineate KPI tracking policy progress and the achievement/localisation of SDGs

Achieving the above in tandem with policy coherence across a varied ecology of public and private organisations represents a significant research and practical challenge still to be fully investigated.

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