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Innovation Accounting and Frugal Innovation

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ABSTRACT
This study investigated innovation accounting and frugal innovation in the manufacturing enterprise in Nigeria from 2011-2022 using Panel Data from annual financial statement of quoted companies. Data for the study were obtained from secondary sources and analysed using Eview10 statistical package namely: Unit Root Test, Cointegration Test; among others. Data for the work were drawn with purposive sampling techniques from samples of observations in Nigeria stock exchange statistical Bulletins. The co-integration .test revealed a long-term relationship among the explanatory variable (discretionary accruals and related party transaction) and response variable (return on equity). Therefore, overall we reject null hypothesis and alternate that there is significant (short-run and long-run) relationship between employed variables but in favour with innovation accounting and creative entrepreneurship strong correlates. It can be recommended that professional accountants should learn on specialization on costing low-cost product and process to sustain frugality. Accounting firms should delve into competitiveness in frugality of business in marketing positions of goods and services. Innovation accounting should adopt by the management of enterprise as measures to seize opportunities that world transform the enterprise to her dreams and visions.

KEYWORDS: *Innovation accounting, Return on Asset, Frugal Innovation, Discretionary Accruals, Related Party Transactions*

Overview

Entrepreneurs seem to delve into tough competitiveness in the business enterprise by working so hard to fine-tune appropriate creativity and innovative strategies to meet the needs of the underserved market. This is as a result of the under developed, developing and developed countries trying to whip out poverty and hunger from been those affected. This is lead to the concept of frugal innovations for enterprise to invent goods and services with quality, affordable, taste and low-cost by addressing the real-world problems.

The frugality is about the mindset of maintaining status quo ante on resource constraints, environmental munificence and emerging market towards achieving viable product, service, system and process with quality, affordable, comfortability, accessibility and durable. The entrepreneurs such as social entrepreneurs, ultrapreneurs, serial entrepreneurs and inclusive

entrepreneurs are best in the approach of frugal innovation without compromising the quality but still achieve greater effectiveness and efficiency. This is in line with the Sustainable Development Goals (SDG) on the saving People (society at large) Profit (enterprise) and Planet (earth).

Frugal innovation is a compassionate driven people centre and problem-solving concept which assists in the need assessment challenges that will be beneficial to the community, society and countries. Compassionate is a vital for all entrepreneurs that delve into frugal entrepreneurship because having the same sense of emotional feelings that is in align with the challenges creates engagement and involvement to solve problems associated with the resource-constraints and environmental munificence.

However, frugal innovation deals with simplicity, flexibility, low-cost effectiveness, affordability, durability and comfortability of product, services and process on positioning to the unmet needs in the emerging markets.

The frugal innovation is supported by the Based of Pyramid (BOP) that Business Model to fine-tune how the developing communities problem can be solve by value creation, value caption and wealth creation which is among the best ways of eliminating hunger and poverty. Frugal innovation contributes immensely to promote quality design that is beneficial to people on basis of needs assessment.

Customer needs is paramount because it's the propeller and fusion of frugal innovation. For frugal entrepreneurship to experience continuous growth, there need to be human capital investment. Thus, entrepreneurship engagement in alignment with the leveraging human capital investment in the transformation of greater learning, unlearning and relearning from artificial intelligence, machining learning, data virtualization, big data analytics and data science, the output of ROI growth would be digitally incomparable to previous analogue dealings. This is call for innovation accounting to augment its plight on entrepreneurial growth (Ovharhe & Chibuike, 2024a).

Deep learning, AI and IoT enhances efficiency in critical aspect of mankind which includes infrastructure, agriculture, primary and secondary healthcare, and infrastructure, optimizing resource optimization and cost minimization (Ovharhe & Chibuike, 2024). It facilitates remote monitoring and control of instrumentation that augments predictive maintenance and enhances lifespan. In healthcare, innovative technology empowers telemedicine, e-health and remote patient monitoring, bringing it services to unmet needs clusters in the community (Ovharhe *et al*, 2024). Furthermore, Ovharhe (2024) argued that by synchronizing innovation technology (Data science, deep learning, IoT, clearer services, personalized solutions, affordable automation, data analytics, data virtualization, machine learning and AI) been aligned with frugal innovation in the communities the simplicity, affordability, cost minimization and quality product solutions can be on measureable metrics, as advantage to marginalized communities which is capable of providing possible remedies to global issues in resource-constrained and environments munificence. This enumerates that innovation technology plays imperative roles in frugal engineering as competitive edge and means of social mission accomplishment in the resource-constraint environment for sustainability, survival and success of mankind livelihood (Ovharhe & Abada, 2024; Qin, 2024).

For innovation to be authenticated in dealing with limited resources and tackling environmental challenges for better livelihood of individuals, communities, national and global economics issues, the social entrepreneurs need to synchronize frugal innovation for accomplishment of social mission (Ovharhe & Akandu, 2024; Ovharhe & Chibuike, 2024).
For innovation to be authenticated in dealing with limited resources and tackling environmental challenges for better livelihood of individuals, communities, national and global economics issues, the social entrepreneurs need to synchronize frugal innovation for accomplishment of social mission (Ovharhe & Akandu, 2024).
It could be pointed out that frugal innovation is an inclusive entrepreneurship concept that focuses on making life suitable for less privilege, inequitable salary gap and unnerved community and individual with quality, abundance, comfort, care and social proof on the drive of social entrepreneurs' dreams and mission to accomplish in the globe. Social entrepreneurs are fundamental in trying to wipe hunger and achieved zero poverty as social innovator, but limited resources are fundamental pitfalls and bottlenecks act as syndrome. To overcome this syndrome the concept of frugal innovation must emerge to orchestrate the activities of the social entrepreneurs to accomplish its entrepreneurial journey and mission (Ovharhe & Akandu, 2024). Frugal innovation considered a valuable source of sustainable entrepreneurship as rendered by ultrapreneurship and social extrapreneurship. This is obtainable, because ultrapreneur and social extrapreneur as frugal enterprises and social innovator are ventures that develop affordable products and services for low-income customers who are typically not deemed worthy of attention by multinationals, corporations and conglomerates. Over recent decades, meaningful high-value sustainable development has arisen as a means for addressing the issues of poverty, zero-degree hunger, inclusive entrepreneurship, environmental damage, and social inequality. It essentially means that enabling communities and developing nations should satisfy their current needs without sacrificing the ability of future generations to satisfy their needs (Ovharhe & Chibuike, 2024; Millers, 2024).

This is while community need assessment and baseline study is of extremely necessity before the commencement of Frugal engineering optimum process startup. This function as a development guide and direction to achieve targeted goals that is specific, while innovative accounting creeps in the society at large. The Environmental munificence issues and concerns about scarcity critical resources needed by (one or more) firms operating within an environment can be orchestrated by the key social entrepreneurs actors for good (Ovharhe & Akandu, 2024). Hence, frugal innovation is pointed at the centre of value creation which in the long-term leads to wealth creation (Ovharhe & Chibuike, 2024; Farooq in Rehman et al, 2024).

Frugal engineering has drawn international recognition with strong influence in the economies of under developed communities and developing nations. The emerging market has benefits from frugal engineering of positioning new or diversified product and service that stimulate more entrepreneurship entries for MSMEs growth and development (Ovharhe & Akandu, 2024; Ovharhe & Chibuike, 2024). No community, challenging environment and nation can prosper efficiently in her ecosystem without the role of social extrapreneurship and ultrapreneurship (Ovharhe & Abada, 2024)

Frugal innovation exceeds knowledge application; it went beyond the normative knowledge which leads to imagination on invention, creation and innovation. Albert Einstein says that imagination is greater than knowledge. Frugal innovation focused on transformable imagination that yields valuable on process, product, administrative, technology and market above the threshold (Ovharhe & Chibuike, 2024). Think frugal globally and acting locally as pacesetters in the entrepreneurial journey and dreams (Ovharhe & Chibuike, 2024).

Business modeling has emerged as an important topic in management scholarship, with it gaining significant momentum in recent years. A business model's significance can be understood through the central role it plays in explaining an enterprise competitiveness and leading edge instead of bleeding edge, numerous evidence between business model and entrepreneurship opportunity (Ovharhe & Chibuike; Ovharhe & Woko, 2024a,b).

The frugality calls for total strategic alliance with credible accounting and financial system by entrepreneurs so the enterprise will now be at lost because of trying to sustain quality and low-cost synchronization. Hence, the innovation accounting tools and system must be in play to achieve this as possibilities.

The accountancy profession can make a substantial difference to companies' innovation investment through better measurement and management of intangibles. It is important to note that accountants manage assets. The structures and conventions associated with tangible assets are well established and understood, but the same cannot be said for intangibles. Figuratively and literally, these are often invisible; like the investment that creates them, they are usually off financial position sheet (Ovharhe & Abada, 2024a,b). As research summarised in the following section aptly demonstrates, however, intangible assets are the primary output (or outcome) of innovation and the biggest source of 'hidden' value within companies today. This being the case, the accountancy profession needs to develop a better understanding of their contribution, so that a company can optimise the quality and usefulness of its whole asset portfolio (Ovharhe & Chibuike, 2024a,b).

Accounting and financial tool can make a contribution to all three of these roles by identifying innovation as a legitimate sphere of accountancy interest, providing a means of keeping score and increasing the visibility of the assets that companies are creating. While the Tool is still at an early stage of development, both it and related approaches have the potential to help companies quantify and rate their innovation performance, as this study illustrates. The Innovation Accounting Tool also seeks to provide results that are meaningful at the firm level, connecting individual companies' investments to their own specific returns, to create knowledge that is meaningful and actionable for board members (Brassell & Reid, 2016). In this respect, the Tool builds on, but has a different emphasis from, the supporting research literature, which has focused on the relevance of innovation to national economic performance. To provide meaningful firm-specific information as much relevant data as possible needs to be captured across a range of activity areas where innovation may be happening accountability is of necessity.

Conceptual/Theoretical Framework

Conceptual Review

Doubtlessly innovation is still a very important and valid subject for scientific research. In science the area occupied by innovation is very extensive. The number of perspectives available within the subject makes the notion of innovation conceptually unclear, obscure and insubstantial. From the scientific point of view an essential problem is not only the detailed description of individual perspectives but also their comparison and the search for things they may have in common. In this context, the issue of implementing the results of scientific research in economic practice remains valid (Brassell & Reid, 2016). Cultivating innovation and fostering development founded upon it is a fundamental challenge for a contemporary business. However, there still remains the question of how innovative a company is when assessed through the prism of various scientific perspectives. When it comes to the numerous areas connected to innovations, both those concerning science as well as real life practice, the problem of managing them as well as creating full reports containing information related to this subject addressed to stakeholders is becoming more and more important. In recent years, there have been many international publications which consider the numerous aspects of innovation as an area of study and deal with the meaning, typology, models and management of innovation (among others, Ovharhe 2024a,b, Ovharhe, Chibuike & Abada, 2022). Managing innovation consists of the right (effective) selection and utilization of appropriate operations as well as concepts directed at the development of innovation also on the basis of modern business models. Achieving this is not possible without coordinating all of the operating areas within the enterprise including marketing and accounting.

The study presents the scope as well as the specific character of innovation from the perspective of accounting and marketing. There is a need to show the differences, possible synergy and dependencies between the marketing and accounting approaches to innovation. The main aim of the paper is to identify problems and formulate preliminary research hypotheses connected to the integration of accounting and marketing functions of an enterprise within the context of the assessment of innovative activities conducted by the entity.

The Context of Accounting Innovation

The term “innovation” is both a multi-disciplinary and an inter-disciplinary category in various field of professionalism, academic and societal view at large. Innovation is generally identified with the generation of something new (Ovharhe & Woko, 20224a,b; Ferreira & Naves, 2014). In publications dealing with accounting there are attempts at defining the place of innovation in accounting. The application of the process of introducing innovative solutions in various areas of an enterprise into accounting comes down to identifying them, measuring them reliably and assigning them to relevant positions in the financial statement (Gochhait, S. 2014).. Innovations play an important role in the assets of every economic entity, however, as stressed by Ovaharhe (2024a,b). Griffin (2013) basically, accounting has not defined the notion of innovation and does not treat it as a separate part of financial assets recognized in the financial position.

Frugal Innovation

With the tough times in most developing nations and low-income countries on how to sustain and survive there is a need to design an eco-system as inclusive to accommodate all mankind for consumption, investment, economic growth and development. The process of designing and

development of framework that is suitable for all mankind is frugal innovation in entrepreneurship (Logan, Emran, Hui, Lambert, Harding, Javin & Oza, 2021). This process is in line with the sustainable development goals (SDG) to eliminate poverty and quench the zero hunger (Ovharhe, 2023; Ovharhe & Chukwu, 2023).

Frugal innovation also known as "jugaad innovation" specializes on engineering a production and process with low-cost new products and techniques that have been created for on come out of what is known as the bottom of the pyramid or positioning for lower end of the mass-market (Qin, 2024).

Frugal innovation centre on developing and innovation acceptable, affordable products efficiently in resource-constrained environments, responding to the specific needs positioning for consumers in developing, under developed and developed countries and marginalized communities (Ratten, 2023). It is, in such scenario being up large for necessity of services and supplies provided to those that need them. The frugal innovation stretches on the entire supply chain management system from the input to output of resources to rewards or customer patronage (Fontanella-Khan, 2011).

Most entrepreneurship deals on small holder famers, who have low levels of education, and are living in a resource constrained environment (Bhatti, Khilji. & Basu, 2013). However, they decided to use whatever resources available locally to produce compost and fodder. With proper mentorship from our side, these farmers became frugal entrepreneurs and started supplying the pressing needs of their communities with affordable Agri-inputs.

Frugal entrepreneurship offers the opportunity to all people regardless of their background to start their own frugal businesses. Moreover, it can be utilized to reduce inequality and poverty by opining the door to equal opportunities in creating inclusive and well-functioning markets that low-income customers can be part of; such customers who are usually placed at the bottom of the pyramid neglected, forgotten, and underserved in mainstream markets (Bhatti, Basu, Barron & Ventresca, 2018).

Small holder farmers are the most affected by the scarcity of Agri-inputs; however, they are excluded from big markets that mostly target large scale farmers. By making the materials affordable and available on community level, these frugal entrepreneurs are contributing to creating a more inclusive market (Crabtree, 2012).

Fasnacht (2022) see frugal innovation as the framework of innovativeness that engineered to invent products, services, processes, technology, market and business models that are best served for market positioning to the less privileged.

Discretionary Accruals

The term 'discretionary accruals' is interchangeably used with abnormal accruals, even though it seems more associated with an active choice rather than an outcome of the measurement system or error. These measures are primarily appropriate to accounting researchers as they attempt to

directly identify problems with the accounting measurement system. The general understanding of accruals is that if the 'normal' component is modelled properly, the abnormal component represents a distortion that is of lower quality.

Prior studies distinguish earnings management based on discretionary accruals. The earnings have two components, cash flow from operations and total accruals. The total accruals are management's judgments and estimates about cash flows for making accounting earnings better reflect a firm's underlying economic performance. Total accruals are the sum of discretionary accruals and non-discretionary accruals. The component of the accrual that is imposed by the accounting regulator in adjusting a firm's cash flows is the non-discretionary accruals. The accruals component managers can choose within the flexibility of accounting regulations in adjusting a firm's cash flows is the discretionary accruals. According to Deegan (2014), discretionary accruals often provide managers the opportunities to manipulate earnings due to the flexibility available.

Yeoh (2007) found an association between cash flows and earnings management in Korean industries and reinforced that cash flow modification is essential. These authors established discretionary accruals were used to achieve earnings benchmarks. Likewise, Sanusi & Izedomi (2014) used this model in Japanese firms and detected earnings management to be associated with executive compensation.

Secondly, the model may also misrepresent without controlling for extreme earnings performance. Saragih (2018) evidenced a correlation between a firm's earnings performance and discretionary accruals. Firms with lower earnings are likely to exhibit negative discretionary accruals. Conversely, firms that have higher earnings tend to show positive discretionary accruals. Apparently, this occurs because firms with abnormally high or low earnings have positive or negative effects on earnings which include an accrual component. Thereby, researchers are expected to detect income increasing-earnings management and income-decreasing earnings management for lower profitable firms. The problem of correlated omitted variable that result from earnings performance has been addressed by Kaszink (1999) in Saragih 2018). Kaszink (1999) recommended a Performance Adjust Technique, otherwise known as the Matched Portfolio Approach to adjust estimated discretionary accruals by removing the effect of a firm's earnings performance. Under this approach, the estimated discretionary accruals were sorted by percentile based on earnings performance, where earnings performance is measured as return on assets. Subsequently, the median discretionary accrual is calculated for each percentile and each observation's discretionary accruals in that percentile is subtracted by the median discretionary accruals. This procedure eliminates measurement errors that are hypothetically correlated with earnings performance, therefore more reliable evidences on earnings management is retrieved.

Kabajeh, Nuaimat and Dahmash (2012) introduced other modifications where, the return on assets was directly used as an additional independent variable into the Modified Jones Model (Dechow,*et al*. 1995) in order to control for firm's performance. Nevertheless, the performance-matched approach was implemented. They calculated performance-matched discretionary accruals, by matching the firm-year observation of the sample firm with the control firm from the same industry and year. Therefore, the closest return on assets (ROA) of current year or prior year, then subtracted the control firm's discretionary accruals from the sample firm's discretionary accruals. Nonetheless, as the literature surrounding the discretionary accruals has

evolved over decades, the more efficient approaches have been derived to account for earnings management.

Related Party Transactions

The standard requires disclosure of related party transactions and balances in the individual financial statements of parent companies and subsidiaries. This means that intra-group transactions between such entities are disclosed, although generally such disclosures are likely to be aggregated by type because of their large volume. For instance, a subsidiary would usually disclose aggregate sales to, and aggregate purchases from, its parent. On consolidation, however, such transactions would be eliminated and would, therefore, not be disclosed in the consolidated financial statements (IAS 24 par 3, 4). The standard also requires that related party relationship, transactions and balances between a venture, an investor in a joint venture or an associate and its joint venture or associate to be disclosed in the individual financial statements of both the investor and associate (IAS 24 par 3). As such, transactions and balances that are not eliminated on consolidation would also be disclosed in any consolidated financial statements produced by the investor. There are no exemptions from disclosure of intra-group transactions for subsidiaries, or for parent companies that produce consolidated financial statements with their individual financial statements. Nor is there any "confidentiality" exemption, even in the situation where an entity has a duty of confidentiality imposed by law. In relation to intra-group transactions between parents and subsidiaries, the IASB has stated that disclosure of related party transactions and balances is essential information for external parties who need to be aware of the level of support provided by related parties (IAS 24 par BC11). Many subsidiaries, for example, depend on financial support from their parents and those who advance credit to such subsidiaries should be aware of the level of support available from the parent or of the lack of such support.

From auditing stand point related party transactions audit represents an important part of a financial statements audit. The detection of related parties and related party transactions as well are between the most important and difficult issues of a financial statements audit. This part of an audit is fateful because of the following reasons: (i) the demand under generally accepted accounting standards to present material related party transactions and particular control relationships; (ii) the possibility to distort or mislead the financial statements in the lack of appropriate disclosure; and (iii) the evidences of fraudulent financial reporting and/or misappropriation of assets which were encouraged, among others, by the existence of undisclosed related parties..

Positive Accounting Theory

Positive accounting research was first discovered by William H. Beaver in 1968 with the publication of an article entitled "The Information Content of Annual Earnings Announcements" (Jensen &Meckling, 1976). Furthermore, positive accounting theory was recognized when Watts & Zimmerman published his article entitled "Towards a Positive Theory of the Determination of Accounting Standards" in 1978. The article had made positive accounting theory a dominant paradigm of accounting research based on empirical qualitative and could be used to justify the various accounting techniques or methods that are now used or find new models for the development of accounting theory in the future.

Positive accounting theory seeks to explain a process, which uses the ability, understanding, and knowledge of accounting and the use of accounting policies that are most suitable for dealing with certain conditions in the future. Positive accounting theory in principle assumes that the purpose of accounting theory is to explain and predict accounting practices. The purpose of positive accounting theory is to explain and predict accounting practices. Explanation means giving reasons for the observed practice. For example, positive accounting theory seeks to explain why companies continue to use historical cost accounting and why certain companies change their accounting techniques. While predictions of accounting practices mean the theory tries to predict phenomena that have not been observed. From the description above, it can be stated that PAT emphasizes whether the accounting theory put forward in the accounting literature can explain the accounting practices carried out and predict the cause of the phenomenon that is happening now and its influence in the future.

The development of positive theories cannot be separated from dissatisfaction with normative theories. If normative theory shows the best way to do something based on premises, norms or standards, positive theory tries to explain or predict real phenomena and test them empirically (Godfrey, *et al*. 2007). Explanation or prediction is done according to its suitability with the observation of the actual situation. Furthermore Godfrey, *et al*. (2007) state that positive accounting theory seeks to answer, among others, the following questions from an economic point of view, namely what are the costs and benefits of alternative accounting methods; what are the costs and benefits of regulation and the process of determining accounting standards; and what is the impact of published financial statements on stock prices? To answer the questions above, a positive accounting theory is developed which can be grouped into two stages, namely the first stage, this stage contains research on the relationship between earnings announcements and stock price reactions. Research at this stage also shows that accounting reports prepared in accordance with historical cost methods provide information used in stock valuations.

Positive Accounting Theory (PAT) in the last four decades developed into a science that can be used to explain the choice of methods that will be used by managers and other constituents of financial statements that can be used for decision making. Deegan suggested that the development of PAT could not be separated from papers from Ray Ball and Philip Brown, Ball and Brown's publication in 1968 in the Journal of Accounting Research led to an interest in positive research that was widespread in capital market research related to accounting. In addition, the development of PAT is also supported by the work of Fama theorists related to the development of EMH.

According to Watts & Zimmermen (1983), PAT has two main elements, namely assumptions and hypotheses. Assumptions are the starting point where a researcher starts from research. Researchers use assumptions to regulate, analyse, and understand empirical phenomena related to research focus such as the use of LIFO and FIFO methods to minimize tax obligations. From this assumption, the researcher can use the hypothesis to be empirically tested. The assumptions used in PAT are the agreement that the capital market is efficient (efficient capital markets), behavioural, opportunistic and also accounting information is an economic commodity and political commodity and each individual acts on their own behalf rationally. Watts and Zimmermen in their paper entitled "Positive Accounting Theory: A Ten Years Perspective" (1990) put forward three hypotheses of PAT, namely;

(1) the bonus plan hypotheses: this hypothesis suggests that managers will choose accounting

procedures that will shift future income to the present period with the aim of getting a bonus. (2) the debt agreement hypothesis: this hypothesis suggests that for companies that would violate a debt agreement, the manager would have the possibility to choose accounting procedures that shift future income to the current period so as to increase net income and ultimately avoid technical errors.
(3) political cost hypothesis: this hypothesis suggests that companies that have high profitability will tend to shift their income from this period to the coming periods to avoid political costs. These three hypotheses form an important component of PAT and will lead to predictions that can be empirically tested.
Positive accounting theory tries to understand and predict the choice of corporate accounting policies. In general, the assessment of the accounting policy to be chosen is aimed at minimizing capital costs and other contract costs. Accounting policies in general are determined by the company's organizational structure, which is influenced by the environment in which the company is located. Thus, the selection of accounting methods to be used is part of the entire corporate governance process (Scott, 2015). Positive accounting theory does not directly determine the appropriate accounting policy choices for the company. In this case, the selection of accounting policies will be easier if viewed from the management side. Because management has the flexibility to choose accounting policies for the company, this also indicates flexibility for management to respond to changes that occur in the corporate environment, such as the existence of new accounting standards.

METHODOLOGY

The study adopted descriptive study and correlation design. The descriptive study is based on quantitative analysis in order to achieve the desired research objectives. The researcher utilizes secondary data from the published annual reports and accounts of manufacturing listed companies in the Nigeria` stock. This method is consistent with other research in the literature. The use of secondary data is justified by the fact that written or printed document are more accurate and reliable in ascertaining compliance to principles in research work than primary data gathered through personal interview or questionnaire administration.
Thus, this study will be base on time horizon with longitudinal design because it is structure on the stochastic models and pool empirical data from value added statement of companies. The sample frame of this study entails the selected period of the pool data in form of staked and empirical data. This period is slated from 2011-2022 with data generated from the six selected firms annual financial position. The study adopted the co-integrated method to analyze the panel data on the predictor variable dimensions (discretionary accruals, related party transactions), while the criterion variable measure is return on asset.
The population of this study comprises of all the listed companies in the manufacturing companies of Nigeria that are quoted firms with the Nigeria Stock Exchange. The study targeted population is generated from corporate quoted companies listed and included in the Nigeria Stock Exchange as per December 31st 2022. Non-probability sampling method in form of availability sampling technique was used in selecting the listed quoted companies as only companies that meet the criteria of being listed on the Nigeria Stock. A reasonable size of the population of firms' space was randomly selected for the study using purposive sampling

techniques. This includes manufacturing enterprise that exhibits high level of invention and innovativeness in their product, process, service, market and administrative. This study covers 22years financial statements using 22years financial statements from 2011 – 2022. The six years each represents a sufficient time period to factor in seasonality and full reporting cycles.

Model Specification

The Multiple Regression Model is appropriate for our analysis because all the variables in this study are measured in ratio scale.

Where; Return on Asset (ROA), Discretionary Accruals (DAC), Related Party Transactions (RPT)

Thus, $ROA_t = f(DAC_t, RPT_t,)$……(1)

-Linear Equation

$ROA_t = a_o + a_1(DAC_t) + a_2(RPT_t) + U_t$…..equ(2)

-Log Linear Equation

$\log ROA_t = \log a_o + a_1 \log(DAC_t) + a_2 \log(RPT_t) + U_t$…equ(3)

The dimension of the predictor variable being used in the study is DAC and RPT, whereas the determinant of the criterion variable is based on the ROA. The subscript *t* represents the time period whereas Logn indicates natural log - the parameters to be estimated and u_t is an error term. The variables are transformed into logarithmic form if necessary to minimize the scale effect of numbers. The test of relevant research hypotheses is also carried out trying to give answers to the research questions. Using tools such as the descriptive statistics utilizing charts and graphs, the ordinary least square regression estimate, the co-integration estimation.

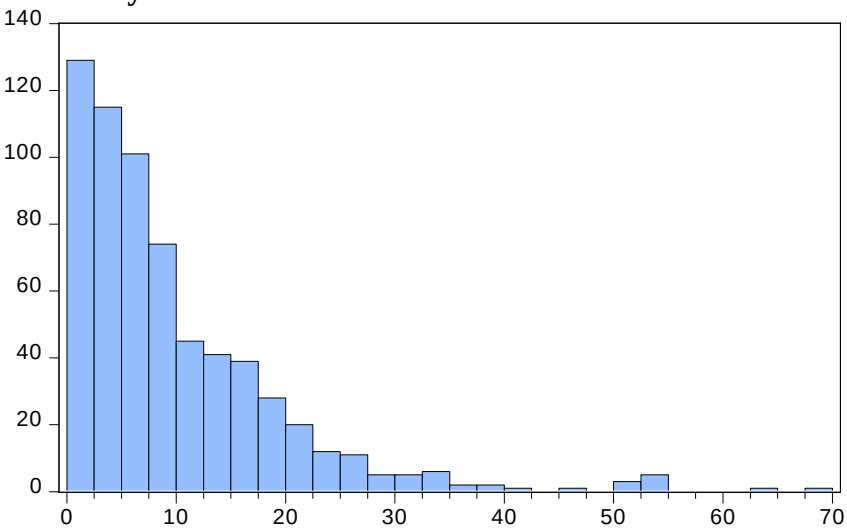
4. RESULTS AND DISCUSSION

The results and discussion are as followed

4.1 Data Analysis (Stochastic Statistics)

In analysing the above data set, it is just right to determine the successful capture of the model by the employed variable towards determining the relevance and worthiness of employed variables. We therefore utilize the Preceded by unit root testing, and proceed towards the Co-integration..

Normality Test



Series: ROA	
Sample 1 650	
Observations 647	
Mean	9.809985
Median	6.890000
Maximum	68.99000
Minimum	0.000000
Std. Dev.	9.831134
Skewness	2.260637
Kurtosis	10.28575
Jarque-Bera	1982.086
Probability	0.000000

In analysing the above data set, it is just right to determine the successful capture of the model by the employed variable towards determining the relevance and worthiness of employed variables. We therefore utilize the Preceded by unit root testing, and proceed towards the Co-integration..

Date: 11/28/23 Time: 09:48
Sample: 1 650
Included observations: 643

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
**|. |	**|. |	1	-0.315	-0.315	63.931	0.000
.|. |	*|. |	2	-0.064	-0.181	66.569	0.000
.|. |	*|. |	3	-0.008	-0.102	66.616	0.000
.|. |	*|. |	4	-0.018	-0.078	66.818	0.000
.|. |	.|. |	5	-0.001	-0.050	66.819	0.000
.|. |	.|. |	6	0.041	0.016	67.916	0.000
.|. |	.|. |	7	-0.015	0.000	68.063	0.000
*|. |	*|. |	8	-0.098	-0.111	74.293	0.000
.|. |	.|. |	9	0.030	-0.055	74.866	0.000
.|. |	*|. |	10	-0.031	-0.079	75.476	0.000
.|. |	*|. |	11	-0.042	-0.111	76.613	0.000
.|* |	.|. |	12	0.082	0.004	81.029	0.000
.|. |	.|. |	13	-0.062	-0.065	83.565	0.000
.|. |	.|. |	14	0.005	-0.038	83.581	0.000
.|. |	.|. |	15	0.029	-0.004	84.119	0.000
.|. |	.|. |	16	0.001	-0.009	84.121	0.000
.|. |	*|. |	17	-0.052	-0.069	85.901	0.000
.|. |	*|. |	18	0.009	-0.066	85.950	0.000
.|. |	.|. |	19	0.013	-0.042	86.070	0.000
.|. |	.|. |	20	-0.025	-0.055	86.500	0.000
.|. |	.|. |	21	0.009	-0.055	86.556	0.000
.|. |	.|. |	22	-0.016	-0.060	86.731	0.000
.|. |	.|. |	23	0.044	0.014	88.052	0.000
.|. |	.|. |	24	-0.022	-0.031	88.388	0.000
.|. |	*|. |	25	-0.029	-0.067	88.957	0.000

.|.	|	*|.	|	26	-0.005	-0.069	88.973	0.000
.|.	|	*|.	|	27	-0.023	-0.100	89.322	0.000
.|.	|	.|.	|	28	0.053	-0.033	91.200	0.000
.|.	|	.|.	|	29	-0.028	-0.063	91.738	0.000
.|.	|	.|.	|	30	0.048	-0.002	93.288	0.000
.|.	|	*|.	|	31	-0.060	-0.072	95.728	0.000
.|.	|	.|.	|	32	0.030	-0.031	96.336	0.000
.|.	|	.|.	|	33	0.020	-0.017	96.596	0.000
.|.	|	.|.	|	34	0.017	-0.007	96.801	0.000
.|.	|	.|.	|	35	0.072	0.065	100.31	0.000
*|.	|	.|.	|	36	-0.075	-0.026	104.13	0.000

Results of Co-integration Test (Johansen Co-integration)

Date: 11/28/23 Time: 09:54
Sample (adjusted): 6 650
Included observations: 627 after adjustments
Trend assumption: Linear deterministic trend
Series: ROA RPT DAC
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value
None *	0.399131	746.8141	159.5297
At most 1 *	0.180909	427.4342	125.6154
At most 2 *	0.129015	302.3100	95.75366
At most 3 *	0.095225	215.7023	69.81889
At most 4 *	0.084326	152.9588	47.85613
At most 5 *	0.061286	97.72356	29.79707
At most 6 *	0.046571	58.06925	15.49471
At most 7 *	0.043930	28.16753	3.841466

Trace test indicates 8 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value
None *	0.399131	319.3799	52.36261
At most 1 *	0.180909	125.1242	46.23142
At most 2 *	0.129015	86.60768	40.07757
At most 3 *	0.095225	62.74356	33.87687
At most 4 *	0.084326	55.23522	27.58434
At most 5 *	0.061286	39.65431	21.13162
At most 6 *	0.046571	29.90172	14.26460
At most 7 *	0.043930	28.16753	3.841466

Max-eigenvalue test indicates 8 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Date: 11/28/23 Time: 09:54
Sample (adjusted): 6 650
Included observations: 627 after adjustments
Trend assumption: Linear deterministic trend
Series: ROA RPT DAC
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic
None *	0.399131	746.8141
At most 1 *	0.180909	427.4342
At most 2 *	0.129015	302.3100
At most 3 *	0.095225	215.7023
At most 4 *	0.084326	152.9588
At most 5 *	0.061286	97.72356
At most 6 *	0.046571	58.06925
At most 7 *	0.043930	28.16753

Trace test indicates 8 cointegratingeqn(s) at the 0.05
* denotes rejection of the hypothesis at the 0.05 leve
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eige

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic
None *	0.399131	319.3799
At most 1 *	0.180909	125.1242
At most 2 *	0.129015	86.60768
At most 3 *	0.095225	62.74356
At most 4 *	0.084326	55.23522
At most 5 *	0.061286	39.65431
At most 6 *	0.046571	29.90172
At most 7 *	0.043930	28.16753

Max-eigenvalue test indicates 8 cointegratingeqn(s)
* denotes rejection of the hypothesis at the 0.05 leve
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-view 10 Output (Authors Computation).

The co-integration test seeks to empirically define the Long-run association/relationship between a given set of variables i.e. identifying the stochastic drift amongst variable (to know if the variables move together). Carried out using the johansencointegration output. Assuming all study

variable as endogenous using the trace and Eigenvalue test.
From the trace test output above, it can be seen that the exists more than one credibility of co-integrating equation, which were all signed respectively, judging by the signed rank, there exist a long run association and movement amongst employed variables, indicating that there is a presence of long run cointegration amongst employed variable since the probability level exhibit values greater than 0.05 level of significance in which case we do not proceed to Vector Error Correction.
Although the Maximum Eigenvalue denotes rejection of the null hypothesis at all cointegration equation level going against the output of the Trace statistics, as it could therefore be established that there exist evidence of long run relationship amongst employed variables, the study therefore chooses the trace statistics.

Testing of Hypotheses One

Ho_1: Discretionary accruals does not significantly relates to return on asset in Nigeria

Hi_1: Discretionary accruals does significantly relates to return on asset in Nigeria

Interpretation of Results

From the result of the regression estimates the outcome is less than the 0.05 alpha level of significance; when considering on the plight of co-integration output. This shows that asset based oriented enterprise performance is sustainable. This becomes a point of targeted frugal innovation to climb high growth. The presence of long-term impact of the explanatory variable on response variable. Hence, it is advisable in the long-term consideration to reject the null hypotheses and accept the directional hypotheses which states that discretionary accruals does significantly relates to return on asset in the long-term.

Testing of Hypotheses Two

Ho_2: Related party transactions not significantly relates to return on asset in Nigeria

Hi_2: Related party transactions does significantly relates to return on asset in Nigeria

Interpretation of Result

From the result of the regression estimates the outcome is less than the 0.05 alpha level of significance; when considering on the co-integration output. This shows the presence of long-term impact of the explanatory variable on response variable which show high asset based and capital asset p[ricing model in the enterprise with application of innovation accounting. Hence, it is advisable in the long-term consideration to reject the null hypotheses and accept the directional hypotheses which states that related party transactions does significantly relates to return on asset in the long-term.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusions

This study examined the relationship between innovation accounting and frugal innovation to

scan and grab possibilities to excel business excellence in the market environment. The study investigated the long run and short run relationship between the variables by using Johansen Co-integration approach. It was strongly believe that the tough turbulence and dynamism in the business environment can be managed by the enterprise by recognizing frugal innovation via application of innovation accounting.

5.2. Recommendations

Base on the findings of this study, the following recommendations are advanced:

1. Professional Accountants should learn on specialization on costing low-cost product and process to sustain frugality.
2. Accounting firms should delves into competitiveness in frugality of business in marketing positions of goods and services
3. Innovation accounting should adopt by the management of enterprise as measures to seize opportunities that world transform the enterprise to her dreams and visions.

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