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ARTICLE

Influence of Governance and Risk Factors on Renewable Energy Investment in Nigeria

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ABSTRACT | Objective: This study proposes a framework to assess the intention of conventional energy stakeholders in Nigeria to invest in renewable energy. The objective is to extend the Theory of Planned Behaviour (TPB) by incorporating governance and investment factors, aiming to provide insights for policy-makers and investors. **Method:** The study utilizes a conceptual framework combining TPB with governance indicators (such as government effectiveness and political stability) and investment factors (such as perceived risk and tax incentives). Data collection will be conducted using a survey questionnaire, analyzed with SPSS and SmartPLS. **Results:** The framework is expected to show that governance quality and investment factors significantly influence stakeholders' intentions to invest in renewable energy. Improved governance and lower perceived risk are hypothesized to increase the likelihood of investment in renewables, addressing Nigeria's significant electricity gap. **Conclusions:** The proposed framework offers a structured approach to understanding the drivers of renewable energy investments in Nigeria. If validated, it will provide critical insights for formulating policies that encourage private investment in the renewable energy sector, helping to achieve Nigeria's energy and climate goals.

Keywords | Renewable Energy, Investment Intention, Governance, Risk,Theory of Planned Behaviour

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INTRODUCTION

International Energy Agency (IEA) defined renewable energy as energy derived from natural processes that are replenished at a faster rate than they are consumed (IEA, 2018). Considering the importance of electricity for socioeconomic activities and the climate challenges caused by fossil fuels used in generating this electricity, the United Nations (UN) is vehemently clamoring for the adequate utilization of renewable energy sources for electricity generation. This call is serving two purposes, one is to bridge the current global electricity gap and secondly is to mitigate the climate challenges posed by gas emissions (IRENA, 2015).

Renewable energies are infinite, clean and are consistently competitive to the conventional sources of energy. They differ from traditional sources mainly in their heterogeneity, plentifulness, and potentiality for use anywhere on the universe, still, more vitally, they hardly generate greenhouse gas emissions resulting to climate change nor polluting emissions. Moreover, their prices are declining, while the prevailing price trend for fossils is in the reverse direction in spite of their current volatility (IRENA, 2018).

The research area, which is Nigeria, the largest African country in terms of population with almost 200 million people has an electricity gap of 175,000MW, with 120 million people living without access to electricity (Shell, 2019). The country majorly generates its electricity from conventional sources (IRENA, 2018), this is, despite abundant renewable energy resources, such as hydro, solar, wind, biomass and geothermal (Amuta, Wara, Agbetuyi & Matthew, 2018). Therefore, urgent, and drastic measures need to be taken to address the prevailing lack of electricity in the country through adequate inclusion of renewables into the current energy mix (World Bank, 2019; Gerretsen, 2018).

In order to achieve the dual targets of bridging the electricity gap and climate goals, ample private investment is extremely required (Rodrigue, 2018). Thus, prompting investments into renewable energy demands adequate understanding of investors' intentions (Schmidt, 2013). Investors' intention has over time predicted through behavioural factors using the Theory of Planned Behaviour (TPB) (East, 1993). Nevertheless, the champion of the theory makes it open for the incorporation of any predictor variable that can additionally describe intention (Ajzen, 1991).

Based on the TPB argument of incorporating additional variables to further describe intention the current study will extend the theory by incorporating governance factors (voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption) and investment factors (perceived risk and tax incentives) to develop a comprehensive framework that will measure investment intention into renewable energy.

INTENTION TO INVEST IN RENEWABLE ENERGY

According to Ajzen (1991), intention is the desire of a person to carry out a particular act. While in the view of Venkatesh, Morris, Davis and Davis (2003) intentions are an individuals' emotional likelihood that he/she will perform a particular behaviour. Intention as an indication of an individuals' possibility to execute a certain behaviour (Yadav & Pathak, 2017) are the sole prime determinant of behaviour conceptually and empirically (Krueger & Carsrud, 1993). Intention formation is rooted on attitudes regarding the considered behaviour which reflects beliefs and perception (Ajzen & Fishbein, 1975, 1980). Additionally, previous researchers are of the opinion that intention is closely related to behaviour (Ajzen, 1991, 2002, 2005). On the other hand, investment intention describes the desire to select particular investment over the other, it also means the planned choices made by investors concerning "when", "where" and "how" capital will be dedicated into financial products and or instruments of distinct nature to create more income or value appreciation (Sindhu & Kumar, 2014).

BEHAVIOURAL FACTORS AND INTENTION TO INVEST IN RENEWABLE ENERGY

Theory of Planned Behaviour (TPB) has been identified as the generally applied theory in studying human intention and subsequent behaviours. Human behaviour and behavioural intention concerning particular behaviour are explained by one's attitude towards that behaviour, the subjective norms resulting from social and societal influence as well as the perceived behavioural control which exerted based on intrinsic confidence and resources available to the individuals (Ajzen, 1991).

Attitude, subjective norm, and perceived behavioural control were posited by TPB to indirectly effect behaviour due to their influence on intention (Ajzen, 2002), as a result, Robert East pioneered the deployment of TPB model to examine the electricity sector investment intention in the United Kingdom more than 20 years ago and his findings reveal the relevance of the model (East, 1993). In addition, empirical researches carried in the renewable energy using the TPB model such as, (Alam, Hashim, Rashid, Omar, Ahsan, & Ismail, 2014; Liu, Wang & Mol, 2013; Schmidt, Blum, & Wakeling, 2013), all support the predictive powers of the model to explain human intentions and subsequent behaviour. However, despite lot of studies regarding behavioural intention in many disciplines including investments, such is lacking within intention to invest in renewable energy in Nigeria. Hence, the following propositions are postulated

- **Proposition 1:** *Attitude is associated with intention to invest in renewable energy.*
- **Proposition 2:** *Subjective norms are associated with intention to invest in renewable energy.*
- **Proposition 3:** *Perceived behavioural control is associated with intention to invest in renewable energy.*

GOVERNANCE FACTORS AND INTENTION TO INVEST IN RENEWABLE ENERGY

According to the World Bank, governance reflects the way and manner country's authority has been carried out. This involves the procedure of government selection, monitoring, and replacement; the ability of government to make and implement good policies effectively; and respect for the state and the citizens as well as recognizing the institutions that control both social and economic engagements among all (World Bank, 2006). The World Bank developed six public governance dimensions termed as world governance indicators (WGI) to assess government performance among nations (Kaufmann et al., 2009), based on a scale of -2.5 and 2.5 (Kaufmann et al., 2010). Furthermore, these governance dimensions are key determinants of private investments (Su & Bui, 2017).

According to Kaufmann et al., (2009), the six public governance quality indicators are; *voice and accountability,* representing the perception of the level to which citizens of a nation can take part in deciding their government, including elections, freedom of speech, association, and media. *Political stability and absence of violence/terrorism,* covering the perception of political violence and other politically motivated crisis, as well as possibility of terrorism in a country. *Government effectiveness* highlighting the perception of the soundness of both public service and the civil service as well as the level of their autonomy from political interference, the soundness of policy formulation and implementation, and the sincerity of government dedication to such policies. *Regulatory quality*, covering the perception of the capacity of the government to formulate and execute good policies and regulations that ensure and enhance private sector participation. *Rule of law*, representing the perception of the level to which citizens have trust and follow the laws of the land, specifically, the soundness of contract agreement, property ownership, the law enforcement agents, and the courts of law, as well as the tendency of crime and violence in a nation. *Control of corruption* covers the perceptions of the level to which government position is used for personal benefit, comprising both minor and major types of corruption, as well as the "control" of the state affairs by the well-to-do and personal interest. Therefore, the performance of a government based on these indicators posits

that, the more positive, the higher the degree of governance in a country. Nonetheless, Nigeria is among countries with low governance, performing below average based on the indicators (World Bank, 2019).

Moreover, most of the literature regarding governance quality within the investment domain are majorly in the context of foreign direct investment (FDI). Empirical studies conducted to date have made available handy insights into the influence of public governance quality on FDI (see for example, Nazim, 2018; Wei, 2018; Kunsch, 2014; Quazi, 2014). In general, the literature established evidence linking governance quality and investment. However, the dynamic interaction between governance quality and investment intention of individuals has not received adequate attention. This study intends to fill this literature gap by extending governance quality literature to look at its impact on domestic private investment, as evidence of such is currently lacking. Based on the above argument, it is anticipated that the higher the governance quality in all the six governance dimensions, the stronger the intention to invest in renewable energy. Hence, the following propositions are postulated.

- **Proposition 4:** *Voice and accountability is associated with intention to invest in renewable energy.*
- **Proposition 5:** *Political stability and absence of violence/terrorism* is *associated with intention to invest in renewable energy.*
- **Proposition 6:** *Government effectiveness is associated with intention to invest in renewable energy.*
- **Proposition 7:** *Regulatory quality is associated with intention to invest in renewable energy.*
- **Proposition 8:** *Rule of law is associated with intention to invest in renewable energy.*
- **Proposition 9:** *Control of corruption is associated with intention to invest in renewable energy.*

INVESTMENT FACTORS (RISK AND TAX INCENTIVES) AND INTENTION TO INVEST IN RENEWABLE ENERGY

Perceived risk is the view of financial asset risk by investors, considering their experience and concern. It is the belief of rationality or otherwise held by a person, a group or a society about the possibility of risk to occur and its effect (Sindhu & Kumar, 2014). This affects intention into capital investments. However, in the general field of finance, attitude toward risk was used to measure risk perception by investors (Kahneman & Tversky, 1979; Mayfield et al., 2008).

Studies conducted to date have provided handy insights about the influence of perceived risk on intention to invest (see for example, Trang, 2017; Vuk, 2017; Abdeldayem, 2015; Wang, 2014; Ali, 2011).

In general, the literature established the association of perceived risk and intention to invest. However, the dynamic correlation between perceived risk and investment intention of individuals has not received adequate attention. Therefore, this study aims to extend perceived risk literature by looking at its effect on intention to invest in renewable energy, as evidence of such is currently lacking. Based on the above argument, this study anticipates that perceived risk could influence intention to invest in renewable energy. Therefore, the following proposition is postulated.

- **Proposition 10:** *Perceived risk is associated with intention to invest in renewable energy.*

Tax incentives are a source of encouragement for new capital investments (Bonucchi, Ferrari, Tomasini, & Tsenova, 2015). It explains the number of government reliefs and allowances granted to attract investors into a particular investment or maintain existing investors in an investment fold. Empirical research to date have provided important insights about the influence of tax incentives on intention to invest (see, for example, Bonucchi et al., 2015; Munyanyi & Chiromba, 2015; Babatunde, 2012; Parys & James, 2010; Tung & Cho, 2000).

Overall, the literature established the association of tax incentives and intention to invest. Nevertheless, the vital interaction between tax incentives and intention of individuals to invest has not received sufficient

attention. Thus, this study focuses to extend tax incentives literature by looking at its effect on intention to invest in renewable energy, as evidence of such is currently lacking. Based on the above argument, this study anticipates that tax incentives could influence intention to invest in renewable energy. Thus, the following proposition is postulated.

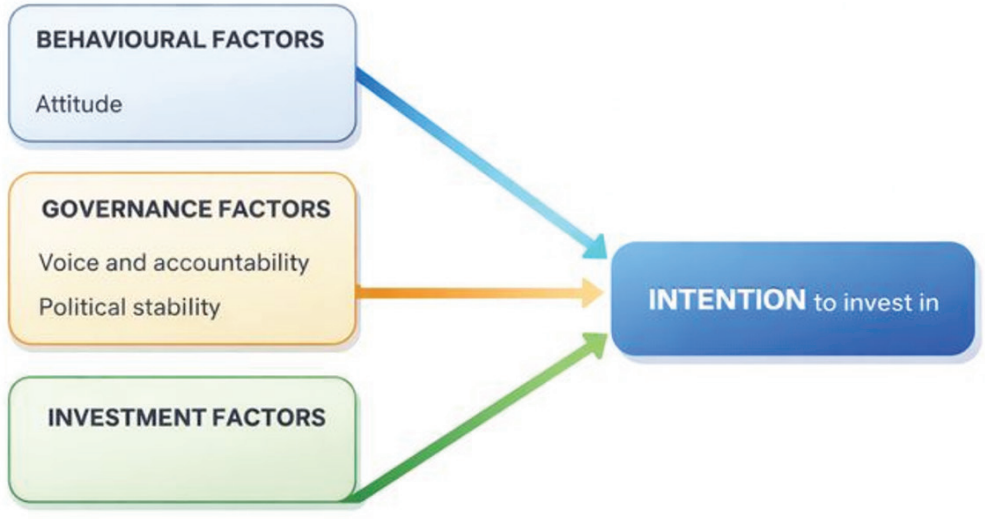
- **Proposition 11:** *Tax incentives are associated with intention to invest in renewable energy.*

FRAMEWORK

A lot of empirical studies was conducted using the TPB model in various areas, such as, Islamic micro-finance (see for example, Albashir, Zainuddin, & Panigrahi, 2018; Maulana, Razak, Adeyemi, 2018). Takaful (see for example, Sapovadia, 2017; Husin, Ab Rahman, 2016; Muhammad, 2016). Online purchase behaviour (see for example, Chen, 2009; Hansen, 2008). Taxation (see for example, Sudiartana & Mendra, 2018; Shaharuddin, Palil, Ramli, & Maelah, 2012). E-payments (see for example, Husnil, 2016; Ting, Yacob, Liew, & Lau, 2016). E-filing (see for example, Tallaha, Shukor, & Hassan, 2014; Ramayah, Yusoff, Jamaludin, & Ibrahim, 2009).

Additionally, in the area of investment, the model is not only been used but also extended to incorporate additional variables to further describe intention to invest. For instance, Das (2019), extend the model to incorporate financial knowledge and personality traits to study individuals' intention to invest in the Indian capital market. Ali (2011), incorporated perceived risk, perceived returns and perceived trust into the model in a study he conducted in Australia to understand intention to invest in the stock market among individuals. Furthermore, East (1993), extended the model to include past experience in his effort to understand individuals' intention to invest in the electricity sector in the United Kingdom.

However, in the context of intention to invest in renewable energy, evidence of deploying and extending the model to incorporate governance factors (voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption) and investment factors (perceived risk and tax incentives) is currently lacking, thus, the current study is timely. Figure 1 shows the proposed theoretical framework.



Proposed Theoretical Framework

PROPOSED METHODOLOGY

Survey questionnaire will be the instrument of data collection to be administered to the targeted respondents, who are key conventional energy stakeholders from energy related Ministries, Agencies and Electricity Distribution Companies. Seven Likert scale rating will be used and measurement items will be adopted from previous studies. Unit of analysis is individual and SPSS and SmartPLS will be the statistical tools to be used to analyse the data.

CONCLUSION

This paper has proposed a comprehensive framework to determine the intention of conventional energy stakeholders to invest in renewable energy by extending the TPB model to incorporate governance and investment factors as depicted in Figure 1. If the proposed theoretical framework is validated, it is anticipated that the outcome will provide meaningful insights to policy makers and investors and will contribute to the general body of knowledge.

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