

INTENTION OF FARMERS TO USE TAKAFUL FOR AGRICULTURAL RISK MANAGEMENT IN NORTH – WESTERN NIGERIA

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Abstract

The research examines the factors influencing the behavioural intention of farmers to use Takaful for Agricultural risk management in North-Western Nigeria. Studies on factors affecting the behavioural intentions of respondents using the TPB have been conducted in various contexts. Nevertheless, investigating the behavioural intentions of farmers on the use of takaful for agricultural risk management has not been conducted. Consequently, data are collected from 560 farmers through a multi-stage cluster sampling technique. Multiple linear regression analysis is conducted using the SPSS software. Findings of the study confirm that the theory of planned behaviour (TPB) is statistically feasible in the prediction of farmers' behavioural intention to use takaful for agricultural risk management in north-western Nigeria based on the sample of respondents utilised for the research. Furthermore, the study reveals that attitude had the highest influence on farmer's intention, which is followed by perceived behavioural control. Although, subjective norms had the least influence, it is also statistically significant in influencing the farmer's intention. The research recommends among other things that, policy makers and takaful practitioners may take advantages from the findings to develop their marketing strategies and agriculture product creations and stakeholders from the context of Nigeria can use the findings to embrace the use of agriculture takaful as a means of intervention to assist farmers in agricultural risk management in order to boost agricultural productions.

Keywords: Takaful, Risks, Agriculture, TPB.

Introduction

Agriculture is a significant economic indicator in Nigeria, considering its significant contribution to the country's GDP. According to the Nigerian Bureau of Statistics (2023), agriculture contributed 18.78% to the GDP in 2018 and in 2019 its contribution to GDP was 24.0%, while the GDP contributions are 26.21%, 24.0%, 26.46% and 28.83% in 2020, 2021, 2022 and the first quarter of 2023 respectively.

The Agricultural sector is one of the most essential sectors of the development of countries' economies in the provision of raw materials, employment, food security, and enhancing investments. Nigeria is located along the inner corner of the Gulf of Guinea on the west coast of Africa. The country shares borders with Benin to the west, Niger to the north, and Chad and Cameroon to the east; its southern coast is along the Gulf of Guinea in the Atlantic Ocean. Nigeria has a land area of 923,768 square kilometers (km²) and includes 853 km of coastline. Nigeria is located primarily within the lowland, humid tropics and is generally characterised by high temperatures throughout the year, it has a relatively Wet coastland and highly arid northern zones. The distribution of vegetation in Nigeria largely follows the rainfall pattern and is broadly categorized as tropical rainforest or savannah. The forest subtypes include salt-water swamps (Mangrove), freshwater swamps and the high forest (Nigeria (2020).

Rainfall occurs seasonally in Kano state and there is a pronounced dry season, but the rainfall is often intensive when it does come, making it necessary for farmers to employ

soil moisture conservation techniques (Mortimore, 2005.) The bulk crops are grown during the rainy season which begins in June or July (Harris, 1999), when the temperature is warm (Wallace, 1981). The soils in the region are reddish brown or brown soils of the pH range of 6.0 - 7.0 (Sonneveld, 1997). The main crops grown in the region are millet, sorghum, and cowpea, while groundnut and sesame are significant minor crops (Moussa, 2021).

Nigeria is a lower middle-income earners country, has been the largest economy in Africa since 2012 (Nigeria (2018). Nigeria has an estimated population of 206.14 million people (2020) with an annual population growth rate of 2.5%. Nigeria's population is projected to reach 262.9 and 401.3 million people in 2030 and 2050, respectively. While Nigeria has made some socio-economic progress in recent years, its human capital development remains weak, largely due to under-investment in agriculture; the country ranked 158 of 189 countries in the World Bank's 2019 Human Capital Index UNDP (2020). Most of Nigeria's population still lives in poverty, without adequate access to basic services, and could not benefit from more inclusive development policies. The lack of job opportunities is at the core of the high poverty levels, of regional inequality, and of social and political unrest in the country World Bank (2021). In Nigeria, the high levels of poverty and low-degree of development and dependence on rain-fed agriculture limits the capacity of poor households and communities to manage climate risk, increasing their vulnerability to climate-related shocks.

More recently, changes in average temperatures, rainfall, climate extremes, and the growing infestation of pests and related diseases precipitated by climate change pose a great challenge to the integrity of the country's agricultural system (Kurukulasuriya, 2013). This is coupled with a high dependence on rain-fed agriculture, which has made the sector highly vulnerable to adverse seasonal conditions (Olayide, 2016). These all contribute to low agricultural productivity and high post-harvest losses and waste in Nigeria (FAO, 2023).

Agriculture is greatly affected by very high climate change, which is known to have a particularly important effect on crop development. Change in climatic factors, such as the amount of rainfall, hours of sunshine and temperature, leads to yearly variable changes in crop production, loss of harvest, drop in productivity as well as other attendant problems. Furthermore, high temperatures and reduced rainfall dry the soil, consequently lessening the amount of water available for irrigation and lessening crop growth in non-irrigated regions (Siwar et al., 2009). Climate change is a major potential threat to food security and agriculture for the country. Because climate change is a continuous and long-term process, its impact will be felt for many years.

Agriculture, which predominantly employs the poor and peasants, is a fragile and risk-prone sector. Risk means susceptibility to an unforeseen major or minor hazardous event (Sinha & Lipton, 1999; Anderson, 1999). Agriculture is subject to risks that are often

unpredictable and outside human control. Examples of such risks include weather, commodity-price fluctuations, changes in consumer demand and outbreaks of pests and diseases, which are prevalent in Nigeria. These disasters could have harmful effects on the economy and the social organisation and psychology of the people affected (Austin & Baharuddin, 2012). Investigations reveal that droughts and floods in Nigeria from 1965–2015 have displaced approximately 13 million farmers, with an economic loss of approximately 0.70 billion U.S. dollars' worth of agricultural produce that was damaged (Nwakwuo, 2019).

Since 2008 when Nigeria made a concerted effort to reduce financial exclusion, some particular groups (Women, Rural Households, and Youths) have not witnessed significant gains (Efina, 2020). With more than 80% of the financially excluded households residing in rural areas, focus should shift largely onto these households as they hold the key to attaining Nigeria's Financial Inclusion targets. Over this time, the majority of interventions designed to increase financial inclusion and reduce poverty have centered on increasing the supply of credit to the "credit constrained" rural households. However, the role of increased credit supply as a critical tool in boosting financial inclusion to solve persistent poverty is being questioned (Banerjee et al. 2015). This can be understood in the context of the Nigerian government experimenting with not less than 15 credit intervention programmes for poverty alleviation with more than \$2 billion, but households living in poverty in

Nigeria have continued to increase (CBN, 2018).

The approach will be concerned with the risk mitigation techniques called insurance, because farming can never be separated from unforeseen disasters that are attributable to it, a new paradigm should be a method which will provide security to both the capital and assets needed as well as lives and properties of the farmers. Insurance is one of the risk management techniques and a legally written contract between two parties with some understandings of regulations. The party whose risks are covered is called the insured or policy holder, and the party that bears the risk of the insured is known as called the insurer (Zubair, 2015). Insurance is a form of risk transferring technique under risk management (Sharma, 2009; Nimsith et al., 2016). Insurance significantly reduces risks in the field of agriculture by way of agriculture insurance. Agriculture insurance was implemented by so many nations. For example, crop insurance in the United States, followed by Japan and South Korea since 1938, 1939 and 2001 respectively. Similarly, China launched a concerted effort to promote agricultural insurance schemes and develop pilot insurances in 2004 (Dewi et al., 2018).

In Nigeria the need for a specialised Agricultural Insurance Company to provide insurance cover to farmers was informed by concern from the government over the vacuum created due to the unwillingness of conventional insurers to accept agricultural risks, which they consider too risky. This leads to the establishment of the Nigerian

Agricultural Insurance Scheme on 15th of November 1987. The implementation of the Scheme was initially vested in the Nigerian Agricultural Insurance Company Limited, which was later incorporated in June, 1988 but later turned into a Corporation in 1993 by the enabling Act 37 of 1993. The Nigerian Agricultural Insurance Corporation is therefore a wholly-owned Federal Government of Nigeria insurance company set up specifically to provide Agricultural risks insurance cover to Nigerian farmers. In Nigeria, many farmers are still far from understanding and making use of insurance services in their agricultural business. This has been attributed to factors such as lack of funds to carry out the business and at the same time pay for insurance services

Takaful (Islamic insurance) is a risk sharing scheme based on brotherhood, solidarity and mutual assistance which is provided for financial aid and assistance to the participants mutually agreed to share the risks (Billah, 2003). Islamic scholars introduced takaful as an alternative approach to insurance because insurance consists of elements of interest, gambling and uncertainty. When a person is placed in a hazardous or damaging circumstance, the participants agree to help him/her from their contribution as donation (Alhabsi et al., 2012). Takaful is introduced in Sri Lanka in 1999 with establishment of Amana Takaful Ltd which has lately made history in Sri Lanka (Mazahir et al., 2017; Jahankeer & Hilmy, 2014; Jaffer, 2007). The Muslim community is concerned about the economic and financial compatibility of Shariah rulings. Since its inception in 1999, takaful has been conceived in Sri Lanka by

delivering products and services using its approach (Jaffer, 2007; Mazahir et al., 2017).

Consequently, this study examines the intention of farmers to use Agriculture Takaful for the management of their agricultural risk. Even though studies have tried to assess the intention of farmers in various other agricultural aspects, but investigation into the intention of farmers to use Agriculture Takaful in the area of agricultural risk management in north – western Nigeria is hard to find. This paper therefore, intends to bridge the gap in the body of existing literature. The findings will be helpful for a variety of stakeholders to understand the intention of farmers to utilise Agriculture Takaful in the context of risk management in the agricultural sector. It is imperative to state that agricultural risk mostly stem from adverse impacts of climate changes not only in North – western Nigeria but also other regions of the country and the world in general.

Literature Review

Theory of Planned Behaviour (TPB) is an extended version of the Theory of Reasoned Action (TRA). It is a behavioural theory that aims to measure the idea or willingness or thinking or intention to participate in a particular activity. It explains how one's ideas and actions are linked. Under the TPB, individual's behaviour is shaped towards intention by three components: attitude, subjective norm, and perceived behavioural control (Ajzen, 1991). TPB has been widely applied in several studies in the field of social sciences, humanities and behavioural sciences. In this way, this theory is applied

among farmers in north-western Nigeria to measure their intention on the use of agriculture takaful.

Attitude refers to a person's thinking towards consumption of either bad or good, where individuals' knowledge influences themselves (Ajzen & Fishbein, 1980; Ajzen, 1991). Attitude shall be favourable or negative by cognitive assessments, emotional experiences, and behavioural inclinations that people hold towards specific circumstances (Blackwell et al., 2006). Attitude, according to modern psychologists, is a sort of inherent psychological trait that includes cognitive, emotional, and persistence in behaviour (Gifford, 2007). In addition, it provides people's judgments about what they like or dislike. The more favourable attitude permits a person towards an activity is, the more likely that person is to engage in that conduct (Aziz, 2015; Fang et al., 2017).

Subjective norm refers to social pressure applied directly to an individual to engage in a particular activity (Ajzen & Fishbein, 1980; Nurul Aien et al., 2015). People are driven to participate in many forms where they are under pressure to satisfy requirements of normative social influence, which is also known as normative conformity (Fang, Wang, and Hsu, 2017). Furthermore, the subjective norm describes how social pressure affects a person's perspective on how to behave an action, and relates on an individual's behaviour (Husin & Rahman, 2016). People's surrounding such as parents, siblings, friends, spouse, well-wishers, career partners etc. will

influence individual's intention to participate (Nurul Aien et al., 2015).

Perceived behavioural control (PBC) is the component which differs with TPB from TRA, a degree of capacity of consumer which is able to guide consumer towards behaviour (Ajzen, 1991). It relates to how much confidence individuals have to be purchased or consumed (Chen, 2007; Kang et al., 2006). It focuses into two categories: how much of control (economically) a person has over his conduct and level of confidence they keep on their ability either to perform or not. PBC can account for a lot of variation in behavioural intentions and behaviour (Ajzen, 2002). Several variables such as time, money and skills may be used to improve and manage people's perceptions as well as behavioural intentions (Kim and Chung, 2011). Furthermore, PBC is assessed directly by asking questions about the capacity to do an action or indirectly by beliefs about the ability to cope with certain interfering or enabling variables (Ajzen, 2002). Although the direct method has been utilized in the vast majority of research so far, belief-based measures offer the benefit of providing insight into the cognitive basis underpinning perceptions of behavioural control.

Behavioural intention, according to Ajzen and Fishbein (1980), refers to a person's position on a subjective probability dimension linked with a relationship between him and a series of acts. Armitage and Conner (2000) define it as 'the incentive for individuals to engage in specific behaviour. The intention analyses an individual's behaviour and decision whether

involving a behaviour or not, and perceived likelihood of engaging in a particular activity (Ajzen & Fishbein, 1980).

Theory of planned behaviour has been widely utilised to anticipate a person's behavioural intention which includes three variables attitudes, subjective norm, and perceived behavioural control (Randall and Gibson, 1991).

Conceptual Framework

Studies reflect that behavioural intention of an individual to complete an action is relying on different behavioural factors. In this regard, the widely used model in various contexts for predicting human behaviour (Pavlou and Fygenson, 2006; Adnan et al., 2017) is the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB) by Ajzen (1991). According to Ajzen and Fishbein (1980), this model is actually the offshoot of Theory of Reasoned Action (TRA). In the model, intention of a person relies on three variables namely attitude, subjective norms and perceived behavioral control. The first two variables are from TRA and last variable was included later in the model and became TPB (Karppinen, 2005). Ajzen (1991) has described human behavior as "a function of compatible intentions. So, when a person has strong intention then he would be more inclined towards particular behaviour (Cheung and To, 2017).

Based on the discussion above, behavioural factors may also influence intentions of farmers to use agriculture takaful for agricultural risk management. Therefore, the study was designed keeping in view the

theory of planned behaviour as theoretical and conceptual model. Importantly, TPB has been tested and cited by various researchers. Additionally, the constructs of other technology acceptance models also originated from TPB (Taylor and Todd, 1995; Perugini and Bagozzi, 2001; Mannetti et al., 2002; Venkatesh et al., 2003; Bosnjak et al., 2005). Some of the researchers such as Alavion et al., 2017; Al-Ajam and Nor, 2013 verified that the constructs of TPB was useful in examining behavioural intention of an individual. Nevertheless, all the models or technology acceptance theories have their own strengths and weaknesses so, none of the model or theory would be accepted as true at global level as noted by Ajzen, 1991; Mathieson, 1991; Gentry and Calantone, 2002; Venkatesh et al., 2003; Bosnjak et al., 2006; Crespo and del Bosque, 2008. Furthermore, the constructs of other models/theories are also based on Theory of Planned Behavior so this theory is selected as the conceptual model of this study.

Although some of the researchers have decomposed TPB and prefer other variables from competing models like Chau and Hu (2001) but their model could not predict Information Technology (IT) acceptance well. Therefore, the original model by Ajzen was used in this study. In this point, Ajzen (1991) highlights that the constructs of TPB are structured in way that high accuracy could be obtained to understand behavioural intentions. The other authors like Armitage and Conner (2001) have also accomplished Meta evaluation of 185 TPB related studies and corroborate that this theory is useful in analyzing behavioral intentions. Likewise, Schulze and Wittmann (2003) conduct TPB

and TRA related Meta evaluation of 27 studies and gathered that the constructs of TRA exhibited comparatively strong association. Importantly, TPB is the offshoot of TRA and perceived behavioral control is added and became TPB. In conclusion, the original form of TPB is adapted for this study.

Attitude is the first predictor of this model and defined by Ajzen (1991) as “the degree to which an individual favourably or unfavourably assess the behaviour being examined.” So attitude of the respondents affects their psychology to use agriculture takaful for management of agricultural risks. The subjective norm is the second important predictor in the model. According to Ajzen (1991) “it is the social pressure that makes a person to perform a particular behaviour.” While Li et al. (2012) stated that a person’s intention to behave in a particular setting could be positively influenced by subjective norms. In this study, subjective norms are the peer pressure from fellow farmers, opinion leaders or even family members to use or not to use agriculture takaful for agriculture risk management. The third important predictor is the perceived behavioural control which means that perceptions of an individual towards ease or difficulty in performing that behaviour (Ajzen, 1991). Thus, respondents’ intention would be high when they perceive that they are self-efficient and have the competency to use agriculture takaful.

Ajzen (1991), states that “the closest behavioural predictor is the behavioural intention. It reflects the strength of an individual that how that individual is self-

motivated and willing to perform that particular behaviour.” In the context of this study, behavioural intention means farmers motivation and self-inclination towards the use of agriculture takaful in agriculture risk management. Some of the authors (Öhlmer, 1998; Webster, 1999; Edwards-Jones, 2006) argue that farmers are important partners in agriculture systems so, understanding of their behaviour in agricultural research is very important.

As this model has been pragmatic in various contexts and settings (Fielding, 2008; Al-

ghaith, 2015; Meijer et al., 2015) so, the model is applied to assess factors influencing intention of farmers to use agriculture takaful for agricultural risk management in the context of Nigeria. It is postulated that attitude, subjective norms and perceived behavioural control could positively influence behavioural intention of farmers in the study area (Figure 1). Thus, the results contribute in the acceptance of agriculture takaful in rural areas of North-western Nigeria in particular and other parts of Nigeria in general in the context of agricultural risk management.

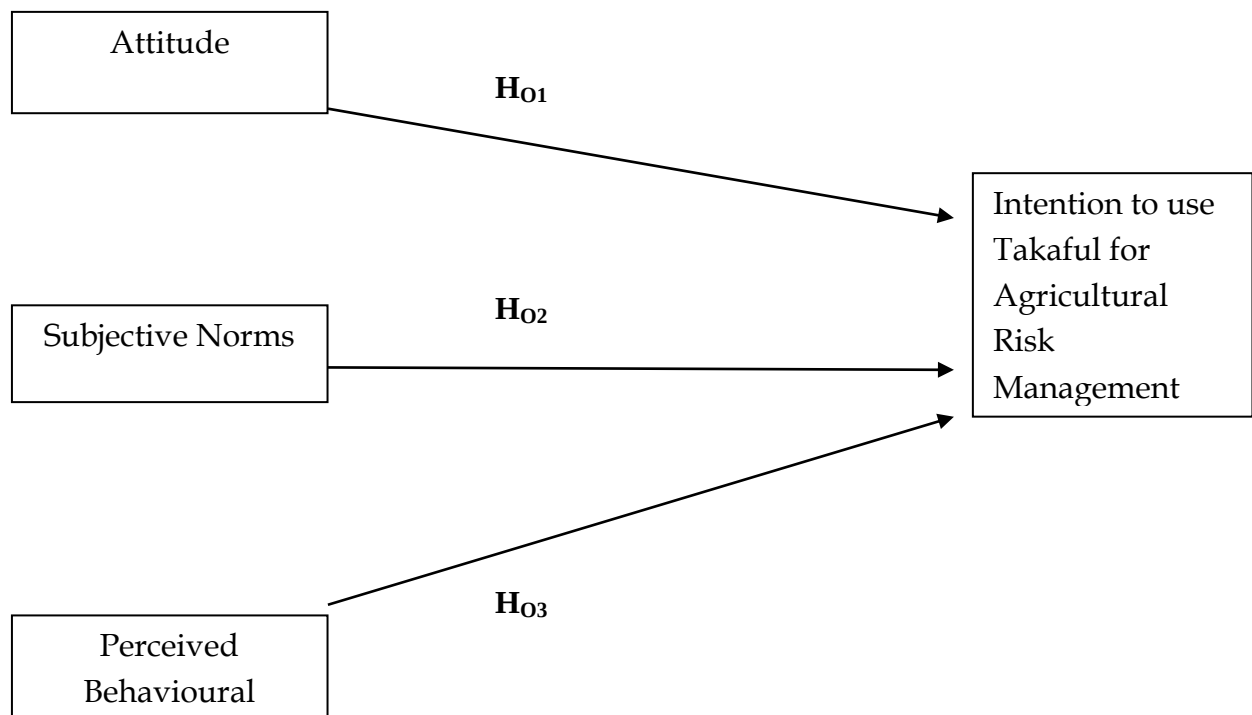


Figure 1: Conceptual framework of the study.

Source: Modified from Ali, M., N. Man, F.M. Muharam and S. Z. Omar, 2020

The farmer's intention to participate in agriculture takaful is assessed using study factors such as attitude, subjective norm, and perceived behavioural control. Although

TPB has been applied several studies in several sectors, limited studies were conducted using TPB in this field previously. Nurul Aien et al. (2015) examine

the involvement of paddy farmers into agriculture takaful in Selangor and Kedah in Malaysia. Attitude, subjective norm, perceived behavioural control and perceived risks are investigated towards intention among 120 respondents representing those areas. Findings show that perceived behavioural control and perceived risks were significant and two others namely attitude and subjective norm were insignificant. In addition, they find that the farmers were mostly affected by pest's attack.

Another study conducted by Echchabi and Echchabi (2013), among French Muslims found adverse findings to Nurul Aien et al. (2015), that subjective norm and attitude were positively significant while perceived behavioural control is insignificant in takaful products in French. Sherrick et al. (2004) study the factors influencing producers' demand for crop insurance among farmers using a survey method in Iowa, Indiana. They realise that farm size, age, debt level, and yield risk are positively related to participation in the insurance program and demand for insurance was also high. Boyd et al. (2011), on farmers' risks in farming find that farmers are more likely to purchase crop insurance. These results suggest that farmers who face on less risk will acquire less crop insurance which reflects their lower demand for crop insurance. According to Makaudze (2005), agricultural production is inherently hazardous. As a result, farmers are exposed to a variety of hazards including flood, drought, heavy rain, diseases, pest assaults, inclement weather, prevalence of animal diseases, and affects by locusts. Most of the small holder farmers are particularly

vulnerable to these perils and hazards. Crop insurance has been used to cope with specific risks in many nations since the agriculture industry deals with a variety of risks.

In addition, Ahamed and Zubair (2016) and Baharuddin and Rahman (2021) conduct in two different studies towards adoption into takaful scheme among public and entrepreneurial intention among youth respectively. Ahamad and Zubair (2016) discover that attitude and compatibility are significant while subjective norm and PBC were insignificant. Baharuddin and Rahman (2021) found all components of TPB are significant towards intention among youths in Indonesia.

Therefore, the following hypotheses are formulated under TPB:

Hypotheses

H₀₁: There is no significant relationship between attitude and behavioural intention to use agriculture takaful.

H₀₂: There is no significant relationship between subjective norm and behavioural intention to use agriculture takaful.

H₀₃: There is no significant relationship between perceived behavioural control and behavioural intention to use agriculture takaful.

Theoretical Framework

Intention is perceived as the most important predictor of an individuals' behavior (Gkargkavouzi, Halkos, and Matsiori, 2019) and is utilised by many researchers in the field of agriculture, such as Ali, Man and

Muharam (2020), Faham and Asghari (2019), Tiraieyari, Ricard, and McLean (2019), Maleksaeidi and Keshavarz (2019), Rezaei, Safa, Damalas, and Ganjkanloo (2019), Borges et al. (2019), Ruby, Abidin, Lihan, Jambari, and Radu (2019), Bagheri, Bondori, Allahyari, and Damalas (2019), and Yaghoubi, Yazdanpanah, and Komendantova (2019), Ahmad and Ghazzhali (2023). Most importantly, the predictor of human behavior used by Ajzen (1991) in his both behavioral models, namely Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB). Intention is also evident in Technology Acceptance Model (TAM) and its extensions, plus in Unified Theory of Acceptance and Use of Technology (UTAUT). These models have been widely used by researchers in different contexts. In the perspective of agriculture, Adnan et al. (2017), state that most of the researchers have utilized TRA and TPB to examine attitudes and behavioural intention of farmers. Therefore, understanding the future intention of farmers to use Agriculture Takaful for their agricultural risk management is imperative.

Methodology

Location of the Study and Sampling of the Research Population

The research is carried out in selected states of North – western Nigeria through multi stage cluster sampling technique. In the multi stage cluster sampling technique, firstly, the clusters are chosen geographically from all the seven states in the north – west, namely: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara.

In the next stage, the areas from each of the three states are selected randomly. Finally, respondents were chosen through simple random sampling technique, and the chosen respondents represented the various areas of the states. Data are collected from a total number of 560 farmers, which represents 80 randomly selected farmers from the various areas of the sampled states.

Method of Sample Size Selection

Krejcie and Morgan's (1970), finding is used in the selection of the sample size for the study. According to Krejcie and Morgan, if the population is more than 1 million, a sample size of 384 will be appropriate to represent the population. Using a reliability level of 0.95 along with the margin of error of 0.5, the study utilises a sample size of 560 farmers which was considered suitable in assessing the behavioural intention of farmers to use agriculture takaful for agricultural risk management in north-western Nigeria.

Development of the Research Instrument

Questionnaire was used to collect research data from the sampled farmers. The research instrument is designed following the outcomes of various researchers who have used theory of planned behaviour (TPB). The research instrument is designed in English language but the medium of the questionnaire is changed into the local language of the respondent farmers (Hausa), this was to ease proper understanding of the designed questions. A pilot study is conducted in order to pre-test the research instrument.

The questionnaire was sub-divided into four (4) sections. Four (4) questions are asked in

both sections A and B about attitude and subjective norms respectively, while five (5) questions and 11 questions were asked in sections C and D about perceived behavioural control and intention respectively, which were all measured through the five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These questions were taken into consideration after painstakingly reviewing the literature.

Measure of Reliability of the Instrument

The variables used in the model and their items should be reflected with their

Table 1: Reliability of Instrument

Variables	No. of Items	Cronbach's Alpha	Type
Attitude	04	0.784	Acceptable Reliability
Subjective Norm	04	0.842	Good Reliability
Perceived Behavioural Control	05	0.742	Acceptable Reliability
Intention	11	0.820	Good Reliability

The above reliability analysis is carried out using the SPSS software and the calculated Cronbach alpha is used as the yardstick. According to Nunnally (1978) and Hair, Anderson, Tatham, and Black (1998) if the value of the Cronbach alpha is more than 0.60 then it may be considered as reliable while 0.70 and above will be more appropriate for the research instrument.

Three independent variables (attitude, subjective norm & perceived behavioural control) and one (1) dependent variable

constructs. Internal consistency reliability is measured to ensure that the observed variables are consistent under the construct of Cronbach's alpha is estimated in order to ensure the reliability (Field, 2009). This reliability test is an essential part of the data analysis, it certifies data to be moved into the main analysis of the study (Baggozi & Baumgartner, 1994), thereby providing a reasonable level of confidence on the data towards the one-dimensional multi-item analysis (Cronbach, 1951).

(intention) are used in the model. Attitude and subjective norms have four items each, while perceived behavioural control has 5 items and intention has eleven items. As presented in table 1 above, all the Cronbach's alpha values of the whole variables are more than the recommended values.

Data Analysis Techniques

Prior to the analysis, the data collected is subjected to rigorous checking in order to ensure completeness and avoid inaccuracies.

The statistical analysis is performed through the use of the SPSS software. In order to ensure the reliability of the regression results, the test of multi-Collinearity was performed, because the problem of multi-Collinearity usually affects the size of the R² and shows high correlation between the independent variables. Thus, the tolerance and variance inflation factor (VIF) are used, because they are commonly used by researchers (Kleinbaum et al., 1988). In order to analyse the significant factors which could reveal the behavioural intention of farmers to use agriculture takaful for agricultural risk management, multiple regression analysis was used. This is because; multiple regression technique can best identify the independent factors among several factors on the single dependent variable. Therefore, attitude towards the use of takaful, subjective norms and perceived behavioural control about the use of takaful are considered as independent variables while behavioural intention to use agriculture takaful are considered as the dependent variable. Consistent with the statistical guidelines suggested by Hankins et al. (2000), since the study is on TPB, the adjusted R² is considered in the interpretation of the multiple regression results, instead of the R². The R² measures the percentage of variation of the dependent variable explained by the regression model,

while the adjusted R² shows the explanatory power of the addition of more regressors to the model. The higher the value of R² the greater the percentage of variation of the dependent variable (Intention) explained by the regression model. Considering the high coefficient of variation obtained by this study, it can be reasonably argued that the goodness of fit of the regression model for the sampled observation is better because for very small values of R² near to zero, the fit is not good.

Results and Discussion

The aim of the research is to measure the intention of farmers to use agriculture takaful in North-western Nigeria. Although many factors can contribute that but, the theory of planned behaviour examines all assumptions through three main components – The farmers’ attitude, the surrounding pressure by the people (subjective norm) and the famers’ perceived behavioural control. These are measured on behavioural intention in order to achieve the objectives of the study.

The statistical results reveal in table 2 below, shows that the issue of multi-Collinearity between the selected independent variables is completely absent, because the VIF is less than the value of ten and the level of tolerance was not < 1 in any independent variable.

Table 2: Result of Multi-Collinearity

Variables	Tolerance	Variance Inflation Factor (VIF)
Attitude	0.372	2.688
Subjective Norm	0.529	1.889
Perceived Behavioural Control	0.429	2.333

Source: SPSS output

The assumption of normal distribution of the data is also tested. The study uses the analysis of variance (ANOVA) to test the assumptions. According to table 3 below, the assumptions are significant ($p=0.000$: p

< 0.05) across all the independent variables, therefore, the statistical position show that the model has sufficient power and is fit to perform.

Table 3: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Significance
Regression	54.768	3	18.256	129.659	.000
Residual	21.965	156	0.141	—	—
Total	76.633	159		—	—

The model of the study consists of three independent variables and one dependent variable; hence, three hypotheses are tested. The result of the first hypothesis shows that attitude of farmers' affects their intention towards agriculture takaful. The results from the test of the second hypothesis also

indicate that subjective norm has an impact on behavioural intention to participate in agriculture takaful. Moreover, results from the test of the third hypothesis also found significant relationship between perceived behavioural control and farmers' intention to use agriculture takaful in Nigeria.

According to the results shown in table 4, there is a high relationship between attitude, subjective norms, perceived behavioural control and intention of the farmers ($r=0.833$) and this result is consistent with the prescription in the Guildford rule, that any absolute value of R between 0.70 to 0.89 signifies a high correlation and strong relationship. Furthermore, an adjusted R^2 of approximately 57% implies that the variance in the dependent variable (intention) is explained by the three independent variables of TPB (attitude, subjective norms & perceived behavioural control). This also implies that the addition of more regressors to the model used by this study has an explanatory power of approximately 57%, thus, the variables utilised in this study are very powerful regressors to the model in question. The results further depict that all the three independent variables of TPB had a positive influence on the farmers' intention

as all the *Beta* coefficient values were positive.

Similarly, the first predictor in the model (attitude) shows the highest influence with a positive *Beta* of 0.429 ($\beta=0.417$, $p=0.000$, $t=6.525$) which was statistically significant at the 5 percent level. The findings of the study are consistent with the findings of Nchise (2012), Echchabi and Echchabi (2013), Aziz (2015), Nurul Aien et al., (2015), Husin and Rahman (2016), Ahamed and Zubair (2016), Alavion et al. (2017), and Ali et al. (2020), who also used the TPB model. The findings of the study are in contradiction to the findings of Park and Yang (2012), where attitude could not influence the respondents. The variation could be as a result of individual's intention which may possibly vary from place to place, as a result of upbringing, training, educational level, religion, norms and culture.

Table 4: Factors affecting Intention of Farmers to use Agriculture Takaful for Agricultural Risk Management

Model	Coefficient		Predictor				
	R	R ²	Adjusted R ²	β	Beta	t-statistics	significance
Predictor	0.833	0.566	0.542	0.875		4.135	0.000
Attitude				0.417	0.440	6.525	0.000
Subjective Norm				0.107	0.102	1.970	0.053
Perceived Behavioural Control				0.221	0.221	3.124	0.000
Durbin Watson				1.641			
F – Value				113.430			

* Significant at 0.05 level

Even though the second predictor in the model is subjective norm, nonetheless, perceived behavioural control revealed a relatively higher influence with a positive *Beta* of 0.221 ($\beta=0.221$, $p = 0.000$; $t = 3.124$) on the intention of farmers and was also statistically significant at the 5 percent level. Consequently, perceived behavioural control has proven to be the second highest predictor in the model used by the study. The last predictor in the model was subjective norm, although, it has a lower *Beta* value of 0.107 ($\beta=0.107$) but it was also positive and statistically significant at the 5 percent level. Therefore, the results of

the multiple regression analysis reveals that all the three predictors used in the TPB model had an influence on the intention of farmers to use agriculture takaful for agricultural risk management based on the sample of respondents used in the study. Most importantly, the model depicted in figure 2 below shows the goodness of fit of the regression model for the sampled observations. Consequently, the data used is fit to explain the behavioural intention of farmers to use agriculture takaful for agricultural risk management in the context of Nigeria.

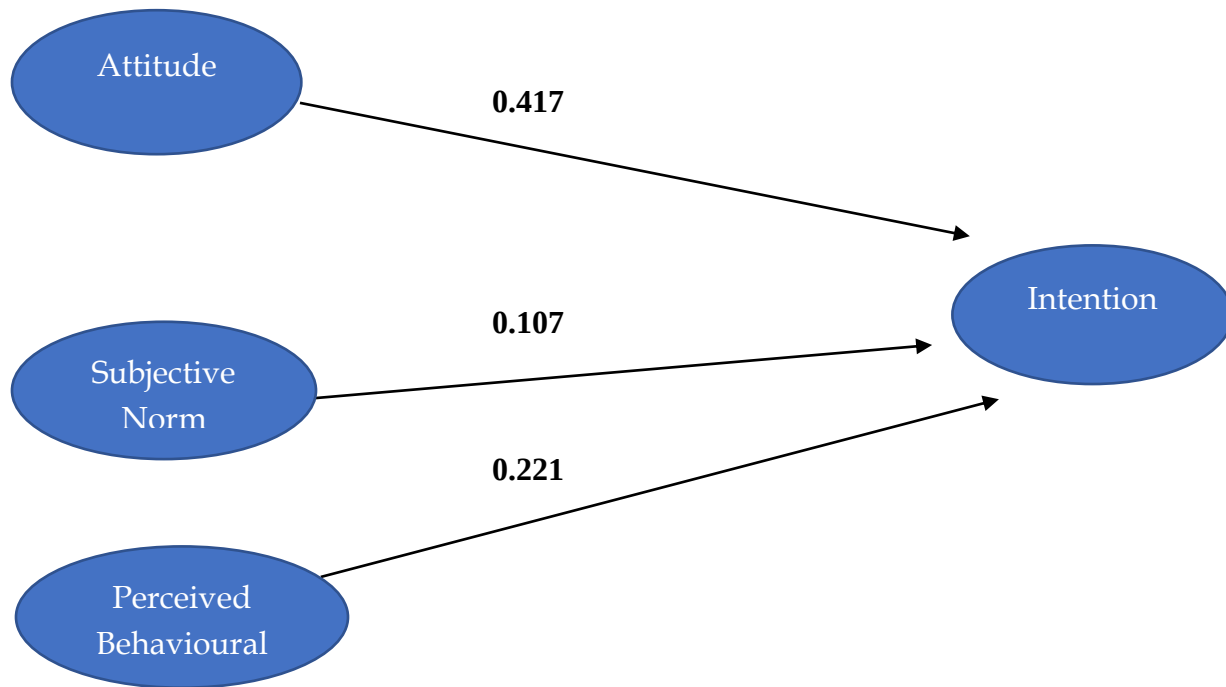


Figure 2: Study's Fit Model [Intention = 0.417 (attitude) + 0.107 (Subjective Norm) + 0.221 (Perceived Behavioural Control)]

Conclusions and Recommendations

The study examines the factors influencing the behavioural intention of farmers to use agriculture takaful for managing agricultural risks in the north-western states of Nigeria. Consistent with previous literature, in order to achieve the objectives of the study, three constructs of the theory of planned behaviour (TPB) is utilised in the model. The overall findings of the study show that all the three constructs used in the model were statistically significant at the 5 percent level of significance, thus, predicting the behavioural intention of farmers to use agriculture takaful. Attitude of farmers had the highest influence on the farmer's intention, which was followed by perceived behavioral control. Although, subjective norm have the least influence but it is also

statistically significant in influencing the farmer's intention. Furthermore, the adjusted R² which represents the explanatory power of the addition of more regressors to the model is approximately 54%.

Generally, the adjusted R² which represents 54% have proved the explanatory power of the addition of more regressors in the model. Finally, the findings find support for the theory of planned behaviour (TPB) in the prediction of farmers' behavioural intention to use agriculture takaful for agricultural risk management in the context of Nigeria based on the sample of respondents utilised in the study.

Finally, the study contributes theoretically and contextually. Policy makers and takaful

practitioners may take advantages from the findings of this study to develop their marketing strategies and agriculture product creations. Therefore, the results would be useful to various agricultural stakeholders from the context of Nigeria to embrace the use of agriculture takaful as a means of intervention to assist farmers in agricultural risk management in order to boost agricultural productions.

This study suggests that future researchers may consider specific farmers under the agriculture sector such as livestock production, poultry, fisheries, and other crops to know their intention to participate in the agriculture takaful scheme in Nigeria or expand the scope to cover the entire northern part of Nigeria.

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