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Assessment and Management Strategies of Risk in Selected Agribusiness Firm in Delta State, Nigeria

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Abstract
This research work examined the various type of risksencountered by agribusiness firm owners in Delta State and their degree of impact on the agribusiness with the aim of proffering management strategies to overcome such risk using field data. Five different risks (Production, Market, Financial, Institution and Human risk) were identified in the study. Stratified multi-stage random sampling technique was used in selecting location and respondents through which one hundred and fifty-one (151) agribusiness firm owners and staffs were selected and interviewed with structured questionnaire. The study area was mapped into three agricultural zones for easy administration of questionnaire. Three local government areas (LGAs) each was selected from each of the zones to constitute the nine LGAs out of twenty- five LGAs for the administration of the questionnaires. Descriptive statistics was deployed to analyze the data collected (using SPSS software). The results obtained revealed that on production risk, agribusiness firm face excess rainfall as the highest risk of 26.5% which is attributed to climate change factors, 34.8%agribusiness owner experience excess output in market (glut) as the highest market risk which result to low price of finished product. On financial risk, unavailable credit accesses recorded the highest with 49.7% of firm owners unable to access credit facility, while 79% of agribusiness owners faced change in government policies as the major institutional risk and embezzlement of the agribusiness firm is the highest human risk with 45% owners of firm encountering it. The observed high risk factors in the various types of risk were therefore flag to be focal point for any agribusiness owners in risk management strategy of the firm.

Keywords: Risk assessment, management strategies, agribusiness firm, Delta state

1. Introduction

The rate of change in the food and agribusiness industries is generating different risk and uncertainty and making the future of most agribusiness firm becoming much less predictable*(Michael et al.,2005)*. Not only is the future more uncertain, the drivers of that uncertainty are also changing, risk has low probability of occurrence, but large consequences are becoming an increasingly important component of the decision environment. Agribusiness investments depend on whims of the environment and nature of the business, hence, there has been skepticism about the realization of the Sustainable Development Goals (SDGs) most especially, on food security for all

(Moss et al., 2003; NIPC, 2006; Chaddad et al., 2010).

Delta State farms and allied enterprises, being prone to a lot of environmental inconsistencies requires high degree of risk aversion strategy to break the circle of poverty which engulfed over 70% of its population and to achieve increased food production to meet 3.18% population growth *(NIPC, 2007)*.

Risk which investment economists describe as the variation from expected outcomes due to imperfect knowledge of investor in decision making is inherent in every form of enterprise but is more intensive in input- output relation among agribusiness productions *(Kuyrah, et al., 2006)*. Alimi and Ayanwale*(2005)* opined that a situation of imperfect knowledge is more common in agribusiness enterprises. Hence, investors in agribusiness firms face the danger that what they expect *ex-ante* may not be realized *ex-post(Ndugbu, 2003)*. For each time an investor borrows money for investment in agribusiness enterprise, there is the possibility that return on investment is less than cost of borrowed fund. Also, in this era of global climate change, an investor cannot predict with certainty the degree of fluctuation in prices of input and output, thus the need to demystify the uncertainty (risks) that characterizes the agribusiness which in most cases led to no return in investment of losses in agribusiness. Risk sources to agribusiness enterprises can be grouped into social, market, political, financial, production and foreign exchange risks (Dercon, 2002; Mikhaylova, 2005). According to Alimi and Ayanwale *(2005)*, in a study conducted on risk in onion production in Kebbi State, Nigeria reported that the most important sources of risk are technical-drought, market and financial.

Farming is a financially risky occupation, it is a business that is subjected to many uncertainties. Daily, farmers are often faced with an ever-changing condition that affects their products and overall welfare. Agricultural production has always been exposed to many risks. These risks can be broadly grouped into five major categories namely; production risk, marketing risk, financial risk, institutional risk and human risk *(David, 2008)*. Production risk can be in the form of drought, excessive rainfall, or outbreak of pests or diseases that can greatly affect the performance of farm produce. Marketing risk could be in the form of commodity price volatility, cost of production, product demand, etc. Financial risk refers to fluctuations in interest rates on borrowed capital, or face cash flow

difficulties, etc. Changes in government policy and unpredictable changes in the provision of services that support farmers' development are known as institutional risk, while human risk refers to illnesses, death, injury, or the poor health of the principal personnel running the farm. All these categories of risk affects the socio – economic characteristic of farmers in the State. The useful research questions that emanate from this study therefore are:i. What Type of risk does Farmers Face in their Farming Enterprise? ii. How does the farmer ascertain the source of these risk?

However, uncertain these risks sources may appear, it is necessary to consider all the risks involved and develop an integrated approach to manage them. Thus the specific objectives of the study are to describe the socio-economic characteristics of agribusiness operator in the State and identify the types of risks faced by agribusinesses in the study area to be able to suggest suitable risk management strategy or strategies.

The null hypothesis that was tested in the study

Ho The weights attached to the various identified risks are equal

OECD (2000) distinguished between risks that are common to all businesses (family situation, health, personal accidents, macroeconomic risks…) and risks that affect agriculture more specifically: production risk (weather conditions, pests, diseases and technological change), ecological risks (production, climate change, management of natural resources such as water), market risks (output and input price variability, relationships with the food chain with respect to quality, safety, new products…) and finally regulatory or institutional risk (agriculture policies, food safety and environmental regulations)*(OECD, 2000)*. Huirne, et al.,*(2000)* and Hardaker *et al. (2004)* distinguish two major types of risk in agriculture. First, business risk includes production, market, institutional and personal risks. Production risk is due to unpredictable weather and performance of crops and livestock. Market risk is related to uncertainty about the price of outputs and, sometimes also inputs, at the time production decisions are taken. Institutional risk is due to government actions and rules such as laws governing disposal of animal manure or the use of pesticides, tax provisions and payments. Personal risks are due to uncertain life events such as death, divorce, or illness. Second, financial risks result from different methods of financing the farm business. The use of borrowed funds means that interest charges should be met

before equity is rewarded which may create risk due to leverage. Additionally, there is financial risk when interest rates rise or loans are unavailable. Musser and Patrick (2001) follow Baquet, Hambleton and Jose. (1997) and define five major sources of risk in agriculture. Production risk concerns variations in crop yields and in livestock production due to weather conditions, diseases and pests. Marketingrisk is related to the variations in commodity prices and quantities that can be marketed. Financial risk relates to the ability to pay bills when due, to have money to continue farming and to avoid bankruptcy. Legal and environmental risk concerns the possibility of lawsuits initiated by other businesses or individuals and changes in government regulation related to environment and farming practices. Finally, human resources risk concerning the possibility that family or employees will not be available to provide labour or management.

Agribusinesses have traditionally focused their risk management efforts on the operational side, with emphasis on food safety. But recent events, such as the extreme weather patterns in Brazil, Russia, and Australia; the "Too-Big-to-Fail" bank failures and bailout; and shifts in government regulations have changed their focus to include market, credit, liquidity, and regulatory risk. Accenture's Risk Management solutions focus on transforming the function from a series of isolated transactions to one of strategic scope and importance. We help organizations break away from the fragmented and compartmentalized risk management solutions already in place by elevating risk discussions on a strategic level *(Accenture, 2014)*

2. Methodology

2.1 Study Area

Delta State was created on the 27th of August 1991 out of the former Bendel State. It is located within Longitudes 5◦ and 6.4◦E and latitudes 5◦00 and 6.30'N with 25 local government areas and occupy a land mass of about 17,163 square kilometer with a population of about 4,098,398 persons *(NPC, 2006).* The State shares similar climatic features with other states in the Niger-delta region. The general climate is characterized by a long rainy season from March/April through October. The climate in Delta State shows latitudinal fluctuation in humidity ranging from the humid tropical in the south to the sub- humid in the north east and lessening humidity towards the north is accompanied by an increasingly marked dry season *(online Nigeria, 2003)*.

2.2 Experimental Methods

Multistage sampling procedure was used to select 151 Agribusiness firms from nine Agribusiness communities in the three Agricultural zones of Delta State. Firstly, three (3) Local Government Areas (LGA) were randomly drawn from the three (3) agricultural zones in Delta State; Delta Central, Delta South and Delta North making a total of nine (9) LGA. Secondly, two Agribusiness communities were drawn from each of the nine (9) local government areas earlier selected to give a total of eighteen (18) communities covered in the survey. Finally, nine agribusiness firms were randomly selected from each of the sampled communities making it up to one hundred and sixty-two (162) agribusiness firm but only one hundred and fifty-one (151) agribusiness firms were utilized for the study. Data for the research were gathered from both primaryand secondary sources. The primary data were obtained from a cross section of agribusiness firm using interview schedule. Data collected include the socio-economic characteristics of agribusiness firm in the State, types of risks faced by agribusinesses in the study area and data were analyzed using descriptive statistics. Descriptive statistical tools such as tables, frequencies, percentage and pie chart were used to analyze the socio-economic characteristics of the respondents. This helped in achieving objective I and II

3. Results and Discussion

To identify the most common types of risks that agribusiness firm faced, descriptive statistics were used. To describe the socioeconomic characteristics of the agribusiness owners in Delta State. These characteristics include educational status, and years in business, type of business, asset ownership and number of employee.

Table1: Socioeconomic Characteristics: Percentage Distribution of Respondents per Risks Encountered

Variable	**Frequency (No of Respondent)**	**Percentage**	**$\bar{x}$/mode**
Educational status			
Primary	44	29.1	
Secondary	99	65.6	
Tertiary institution	8	5.3	
Total	151	100	Mode = Secondary education
Firm size			

Less than 10 employee	143	94.7	
10-40 employee	8	5.3	
Total	151	100	$\bar{x}$=7
Business type			
Livestock	78	51.7	
Aquaculture	36	23.8	
Processing	35	23.2	
Lumbering	2	1.3	
Total	151	100	Mode =Livestock
Business experience			
1-5years	101	66.9	
6-10years	44	29.1	
11-15years	5	3.3	
16-20years	1	0.7	
Total	151	100	$\bar{x}$=3

Sources: field data 2015

Educational Status of Firm Owner

From the survey result in Table1 above, majority of the firm owner had formal education. This revealed that operators of agribusiness enterprises in Delta state were literates as could be seen, 29.1% of agribusiness owner had primary education and 65.6% had secondary education while 5.3% had tertiary education. This shows that the agribusiness owners in the study area will be apply some of the risk management strategies revealed in this study. The result obtained is also in agreement with*(Spring and McDade, 1998;Inoni and Dicta, 2003)* reported that low level of higher educational qualification is characteristic of the informal sector activity.

Firm Size

According to Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), Abuja, 2007, Firm size is determined by the number of employees in agribusiness. Thus the size of firm in the study area can be classified into two, the micro firm that has less than 10 employees and small firm which has 10-49 employees. From the result presented in table above, it was found that 94.7% of the agribusiness owners operate micro firm while only 5.3% operates small firm. This reveals that micro and small firms have high competitive advantage over large enterprises in the study area, by serving dispersed local markets and produce various goods with low scale economies for niche markets *(Olorunshola, 2003)*

Business Type

The result presented in Table above shows that 51.7% agribusiness owners in the study area focused on livestock product, 23.8% of respondent were involve in aquaculture, while 23.2% of agro-based owners were into processing of farm produce and only 1.3% of the firm owners were into lumbering. This shows that livestock business flourish more in the study area follow by aquaculture business. This is a clear indication of availability of raw material, environmental factors and agribusiness awareness. This is in line with Robertson (1998) report on agribusiness.

Business Experience

From the survey result presented in Table above, 66.9% respondents in the study area had spent less than or 5 years in agribusiness firm, while firm owner that has spent 6-10years in agribusiness were 29.1%, while 3.3% has spent 11-15 years in agribusiness, only 0.7% of firm owner has spent 16-20 years in the business. The business experience of agribusiness operator will influence positively and significantly on an individual participation decision (Inoni and Dicta, 2013). The more experience an individual has, the more the likelihood of participating in risk management. This result shows that few agribusiness owners have substantive years' experience in the agribusiness.

Value of Asset

Table II below shows the value of asset owned by agribusiness owners, the result of the value of asset obtained shows that 6.35% were cash in their disposal, 1.84% cash in bank, while input is 24.94% and output is 20.04%. Land asset values constitute 24.34%, buildings 20.45%, machineries 1.64% and vehicles is 0.41%.

This result of the value of asset of agribusiness owners indicates that the firm owners are either micro or small firm owners. This agrees with the result of the firm size (SMEDAN), Abuja, 2007.

Table II: Value of asset by Respondent

Variable	Frequency	Percentage %
Cash	31	6.35
Cash in bank	9	1.84
Input	122	24.94
Output	98	20.04
Land	119	24.34
Building	100	20.45
Machineries	8	1.64
Vehicle	2	0.41
Total	489	100

Field data 2015*Multiple responses*

Types of Risks Faced by Agribusinesses in the Study Area

The results of the surveys how the type of risks faced by agribusiness firm owner in the study area. Agribusiness owners reported that they were sometimes affected by any of the five types of risks namely production/ yield risk, marketing risk, financial risk, institutional risk and human risk in the study area. These are discussed further.

Production Risk

Table III presents the result of the production risk. The result shows that 26.5% and 16.3% of agribusinesses firm were affected by excessive rainfall and diseases respectively. Lack of access to input and soil erosion was experienced by 14% and 13.3% of agribusiness firm respectively, and 8.3% of the agro-based firms were attack by pest. While agribusiness firm encounter drought, fire outbreak and theft in the magnitude of

8.3%, 5.7% and 7.6% respectively. The overall production risk faced by firm owners as identified by this study can be attributed to climate change factors. Thus, climate change constitutes risk to Agribusiness. According to the Inter-Government Panel for Climate Change (IPCC, 2007), there is clear evidence that temperature on the surface of the earth that has risen globally with important regional variations. The level of precipitation changes in most places that could result in invasions of pest and diseases, drought vary considerably from year to year. It is apparent that with the current global climate change, production risk is becoming a great concern for many agribusinesses. Figure 1 show the percentage of the different types of production risks faced by agribusiness firm.

Table III Percentage Distribution of Respondents per Risk Encountered (Production).

Variable	**Frequency (No of Respondents)**	**Percentage (%)**
Pest	22	8.3
Disease	43	16.3
Drought	22	8.3
Excessive rainfall	70	26.5
Soil erosion	35	13.3
Fire outbreak	15	5.7
Lack of access to input	37	14.0
Theft	20	7.6
Total	264	100

Field data 2015 (Multiple response)

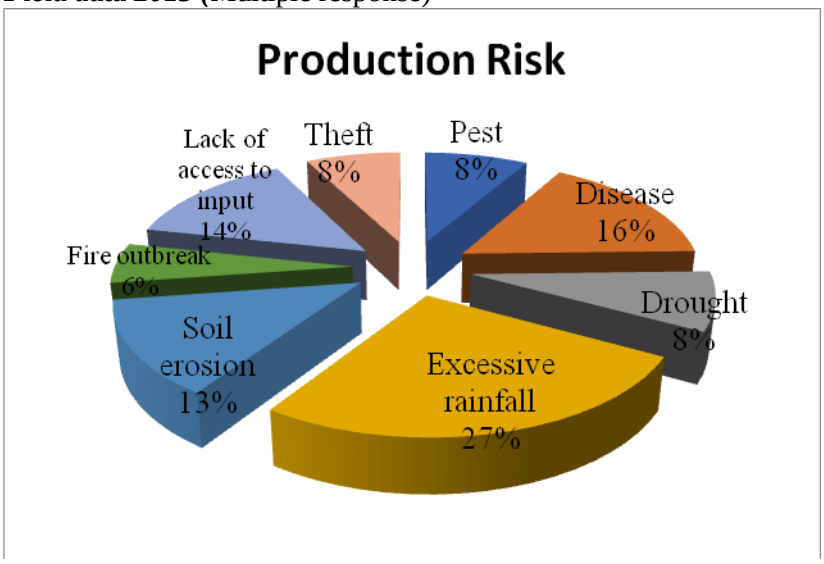

Figure 1: ***Percentage distribution of respondent by production risk encountered***

Market risk

In situations where produce prices are liberalized as it is in the study area, seasonal and regional fluctuations are expected. Table below presents the various types of market risk in the study area, 34.8% of agribusiness owners experienced excess output in market (glut) which result to low price of finished product. 30.3% of the respondent also experienced volatile/high price of input. The

result also shows that 9.4% of agribusiness owner experience low price of output in the market and 8.6%, 6.8%, 6.0% of agribusiness firm owners faced poor transportation, lack of information and loss of market access respectively. While 2.6%, 1.9% of the respondents encounter poor infrastructure and low quality of output respectively. Figure 2 show the percentage of the different types of market risks faced by agribusiness firm. This result on market risk is a call on government to regulate the market price of agribusiness products and establishment of good storage facilities for farm products.

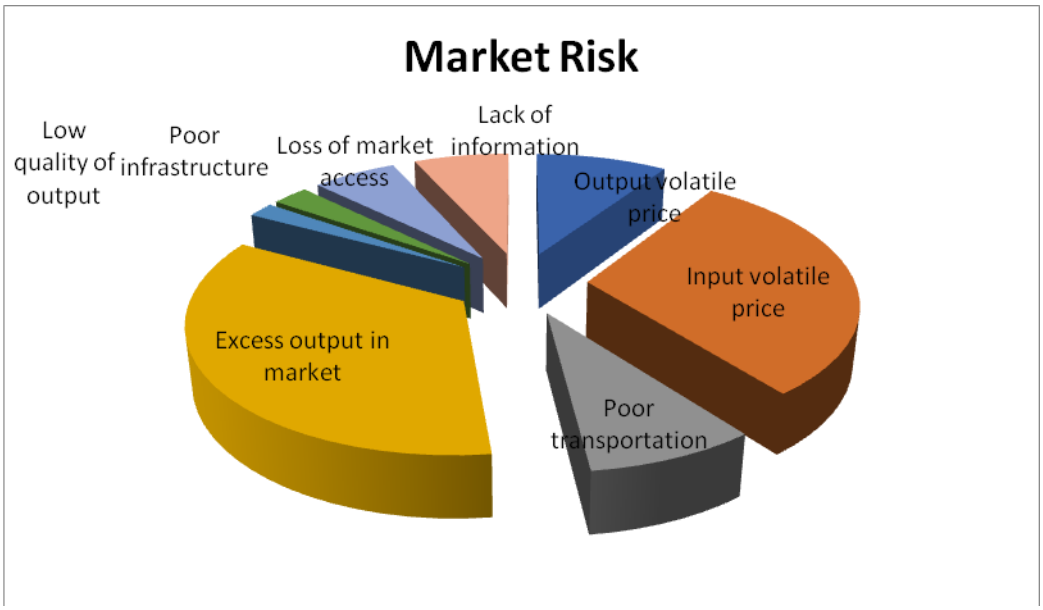

Figure 2: Percentage distribution of respondent by market risk encounter

Financial risk

Table IV, presents the result of the financial risk analysis; the result shows that 49.7% of agribusiness firm owners in the study area are highly affected by unavailable credit access agribusiness. 24.8% respondent also experience insufficient funds for loan repayment while 22.3% of agro-base business owners experienced bankruptcy in their business

Table V: Financial risk analysis: Percentage Distribution of Respondents per Risks Encountered

Variable	**Frequency**	**Percentage (%)**
Volatile interest rate	2	0.7
Uanavailable credit access	140	49.7
Volatile exchange rate	7	2.5
Insufficient fund for loan repayment	70	24.8
Bankruptcy	63	22.3
Total	282	100

field data 2015 ;*Multiple responses*

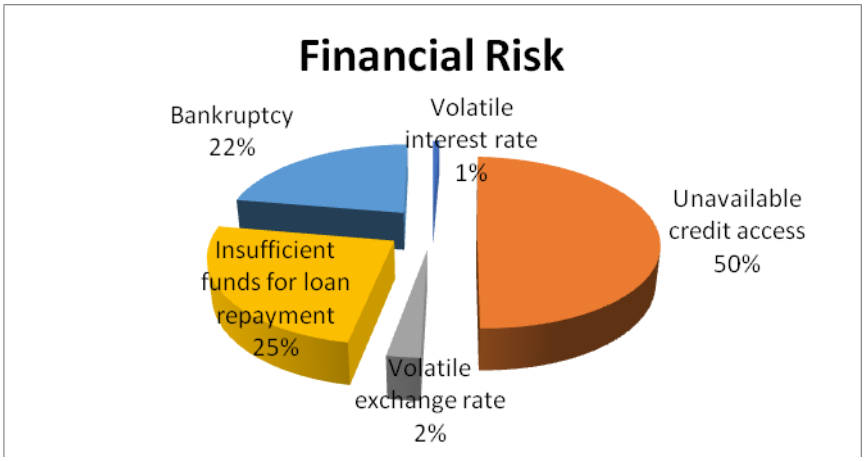

Figure 3: Percentage distribution of respondent by financial risk encountered

Institutional Risk

Table VI shows the institutional risk faced by agribusinesses in field. The result showsthat institutional risk faced by agribusinesses firm in the study area has to deal more on Government policy. 79.3% of agribusiness firm experience change in government support.7.9% of the respondent encounter change in tax rate while 7.9% and 4.8% of the agribusiness owner experience change in monetary policy and fiscal policy respectively

Table VI: Institutional risk analysis: Percentage Distribution of Respondents per Risks Encountered

Variable	Frequency (No of Respondents)	Percentage (%)
Change in tax rate	5.0	7.9
Change in government support	50	79.4
Change in monetary policy	5	7.9
Change in fiscal policy	3	4.8
Total	63	100

field data 2015

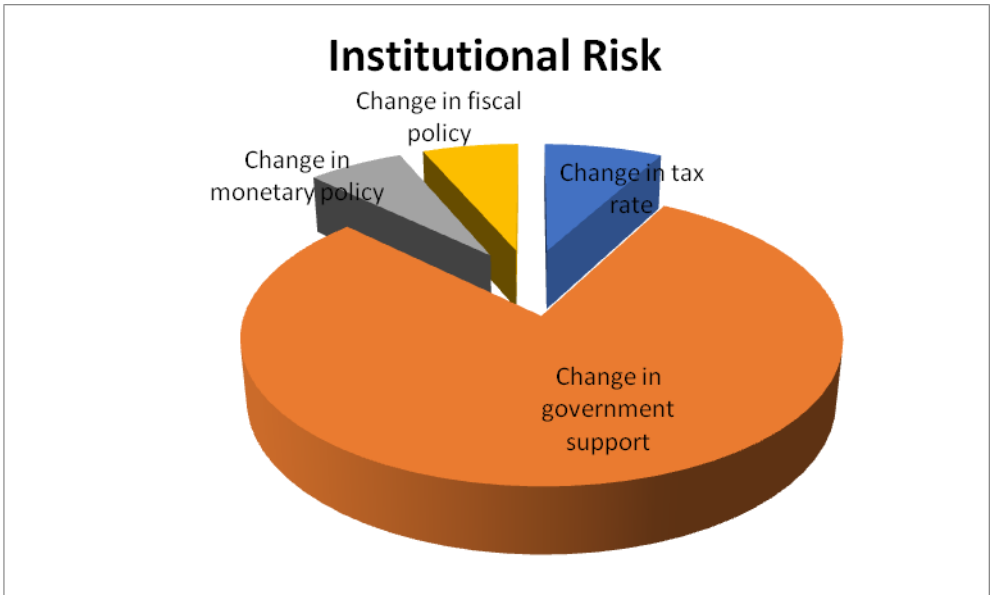

Figure 4: Percentage distribution of respondent by institutional risk encountered

Human Risk

Table VIIshows the Human risk faced by agribusinesses in Delta State. The result shows that 45% agribusiness owners funds were embezzled. 40% agribusiness owners were contended with one form of accidents or the other, while 10% and 5% agribusiness owners encountered staff illness and experience death of staff. These reported values from the human risk to the agribusiness indicate that this form of risk is minor compare to production risk, market risk and financial risk.

Table VII: Human risk analysis: Percentage Distribution of Respondents Per Risks Encountered

Variable	Frequency (No of Respondents)	Percentage (%)
Illness of staff	2	10
Death of staff	1	5
Accident	8	40
Embezzlement	9	45
Total	20	100

field data 2015

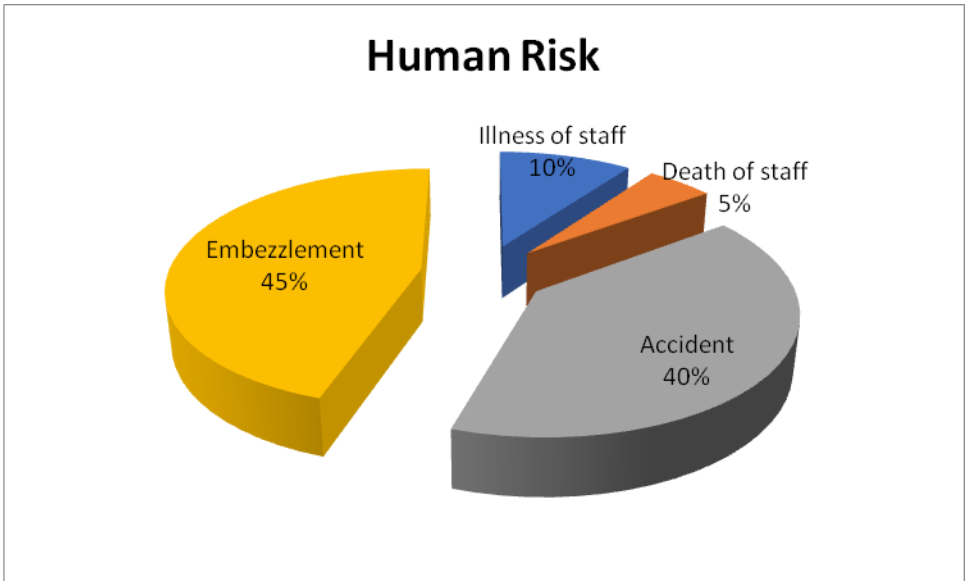

Figure 5: Percentage distribution of respondent by production risk encountered

Summary of Findings

This research work was carried out to examine the type risk among agribusiness firm owners in Delta State, Nigeria. It specifically sorts to identify the types of risks faced by agribusinesses in Delta State, investigate how agribusiness firm ascertain the source of risk in the environment

Five different risks (Production, Market, Financial, Institution and Human risk) were identified for this study. A multi-stage random sampling technique was used in selecting the location and respondents through which one hundred and fifty-one (151) agribusiness firm owners and staffs were selected and interviewed with structured questionnaire.

The study was conducted in the three agricultural zones of Delta State. The mapping into the three agricultural zones was done for easy administration of questionnaires. Three local government areas each was carefully and randomly selected from each of the zones to constitute the nine LGAs out of twenty- five LGAs. An average of seventeen agribusiness firm owners/ operating staff was interviewed with the structured questionnaire. Collected Data were analyzed using descriptive statistics (using SPSS software)

The descriptive analysis the result reveal that 26.5% agribusiness firm were faced by excess rainfall which is the highest risk faced in production risk which is attributed to climate change factors. 34.8%agribusiness owner experience excess output in market (glut) as the highest market risk which result to low price of finish product. For financial risk, unavailable credit accesses were face by 49.7% of firm owners, while 79% of agribusiness owners faced change in government support and is the major risk in institutional risk and embezzlement of the agribusiness firm top the human risk and 45% owners of firm encountered it

Conclusion

The study specifically sorts to identify the types of risks faced by agribusinesses in Delta State . Climate change, excess output (glut) resulting to low price of finish product, unavailable credit facilities, frequent change in government support/policies in agriculture and corruption were identified to have constitute the major risks faced by agribusiness firms.

In light of the findings of this research work, the following recommendations are made;

i) Government should put in place policies and programs aimed at improving farmers' access to affordable credit facilities, this will help agribusiness firms owners in effectively ameliorating some identified risks through the adopt.
ii) Increased extension service activities should be encouraged by all levels in order to educate agribusiness; this will facilitate agribusiness risk management potential.
iii) More research efforts on agribusiness risk should be encouraged to help generate more scientific information on the issue. Further study to identify the major constraining factors, how to ameliorate the identified risks is highly recommended.
iv) Development of co-operative insurance among the farmers and agribusiness firm owners should be encouraged.
v) Adequate provisions of farm chemicals to farmers to enable them tackle the problem posed by pests and disease that attack farm crops and produce in order to reduce production risk.

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