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MULTI-RISK MODEL OF SMALL - SCALE AGRICULTURAL ENTERPRENUERS IN CENTRAL PART OF NIGERIA.



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INTRODUCTION

The small-scale agricultural entrepreneurs exist at the margins of modern economy (Ayinde et al, 2012). They have one foot in the market economy and the other in subsistence. They are thus neither fully integrated into that economy nor wholly insulated from its pressure. Hence, they are more exposed to risk than other segments of the population (Adubi 2000). Given this setting, it is therefore not surprising that many agricultural policies and programmes since Nigeria’s independence in 1960 have been directed toward these small-scale farmers’ production methods and trying to equip them against risk through adequate use of improved technology embodied in package approaches (Ayinde, 2008). There have being many models and methods that include the risk component, though internally consistent many are yet to be fully tested for their ability to predict real world behaviour and outcomes (Beverly 1990, Just and Pope 2003). This situation creates discrepancies between decisions under risk by small-scale agricultural entrepreneurs and decisions with assumption of certainty by agricultural planners and researchers. The risk analysis model provides the framework for any programme and innovation planning that is to result into a successful effort (Ayinde et al, 2012). Wold and Shriver 1997 noted that each organization or business should be analysed bases on risk to determine its potential. The risk analysis model of entrepreneurs forms the framework for any programme and innovation that is to result into a successful effort. Analysing and revealing the risk model of small-scale agricultural entrepreneurs is a requisite to good planning in agricultural production and innovation. This will lead to the development of a normative decision theory based on the inclusion of stochastic element in whole farm planning models for agricultural development via the small-scale agricultural entrepreneurs. Hence the study examinesthe small- scale agricultural entrepreneurs’ models in order to identify the socio-economic variables responsible for risk behavioural group that agricultural entrepreneurs belong.

METHODOLOGY

- Primary and secondary data were collected for this study.
- A survey with the aid of questionnaires administered to the agricultural entrepreneurs with the assistance of well trained enumerators (Figure 1 &2) .
- A pretest was carried out in order to standardize the survey instrument.
- Descriptive analysis, Multii-item scale and Multinomial Logistic Model was used to analysis the study.

Figure 1 &2. Respondents with enumerators during field interview trips



SAMPLING TECHNIQUE

The study was carried out in Nigeria. Kwara state was randomly selected among the four central states in Nigeria. The state has sixteen Local Government Areas (LGA) which have been divided into four zones by the Kwara State Agricultural Development Project (KWADP) in consonance with ecological characteristics and cultural practices (KWADP 2005). These zones are further divided into blocks on the basis of the extension-farmers ratio. The population for this study consists of small scale agricultural entrepreneurs of Central State of Nigeria. A four - stage stratified random sampling technique was utilized to select the sample for the study. In the first stage, a state was randomly selected from the four central states in Nigeria. In the second stage, the non-overlapping four zones nes were utilized. In the third stage, half of the blocks in each zone were randomly selected. While in the four stage, the agricultural entrepreneurs’ population provided by KWADP was utilized to select a sample size of 250 for the state using proportion allocation technique as used by Ayinde, 2008. By this technique, the number of sampled agricultural entrepreneurs was obtained such that (1)Where: $n_h$  = Number of agricultural entrepreneurs to be selected in stratum/zone h;  $n$  = Total number of sampled agricultural entrepreneurs;  $N_h$  = Number of agricultural entrepreneur population in zone or stratum h;  $N$  =Total number of agricultural entrepreneurs population; Consequently, a random sample of 32, 64,6 and 88 respondents was taken from zone A, B, C, and D respectively based on the agricultural entrepreneurs population’s proportion of the zones.

Table 3:Result of Deterministics of Socio – Economic Variables on the Risk Behaviour Groups

Variables	Zone A		Zone B		Zone C		Zone D	
	Risk Averse	Risk Taking	Risk Averse	Risk Taking	Risk Averse	Risk Taking	Risk Averse	Risk Taking
	Parameter s	Parameters	Parameters	Parameter s	Parameters	Parameters	Paramete rs	Parameters
Household size	0.3(0.1)*	3.57(5.8)	0.24(0.16)	0.15(0.15)	0.23(0.20)	0.33(0.20)	0.25(0.05)	-0.04(0.1)
Year of Education	0.04(0.1)	-16(1.1e+7)	0.02(0.12)	0.08(0.11)	0.05(0.15)	0.04(0.16)	0.13(0.10)	0.01(0.11)
Number of Family members earning income	-0.03 (0.4)	-38.5 (1.2e+8)	-0.8(0.95)	-0.9(0.94)	-0.5(0.57)	-0.4(0.16)	0.16(0.20)	0.17(0.21)
Access to Extension Services	1.6(1.32)	103(1.e+8)	-0.65(2.5)	-1.85(2.2)	-1.4(1.65)	-2.5(1.79)	0.93(1.01)	-1.52(1.4)
Farming experience	—	—	0.1(0.11)	0.11(0.11)	0.01(0.05)	0.03(0.05)	-0.3(0.03)	0.04(0.03)
Available farm size	—	—	-1.3(0.7)*	1.4(0.62)*	0.05(0.46)	0.34(0.51)	0.33(0.29)	0.75(0.3)
Proportion of Cropped land	—	—	8.23(5.45)	8.5(5.0)**	-1.21(2.3)	-2.38(2.5)	1.67(1.76)	-0.30(1.9)
Proportion of off farm income	—	—	3.45(3.51)	2.28(3.45)	-2.29(2.3)	-2.3(3.14)	-.84 (1.25)	-1.63(1.3)
Member of cooperative	1.54(1.5)	0.02(2474)	-0.002(3)	-0.4(2.43)	-0.25(1.6)	-0.64(1.1)	0.31(0.80)	0.65(0.85)
Disposable Assets	0.004(2)	52.(1.1e+8)	-	6.3e- 4(3.e-4)**	-0.0001 (0.0004)	-1.44e- 4(4.2e-4)	-0.00003 (0.0001)	-0.000036 (0.0006)
Crop diversification	0.6(1.90)	0.05(400.5)	0.746(1.950)	1.065(1.9)	-17.0(3.6)	+17.(3.7)*	0.31(0.99)	-0.3(0.99)
Amount of capital	-1.2e- 6(5.8e-6)	125.2(400. 4)	-3.e-5(1.e- 5)*	3.1e-5 (1.3e-5)*	-1.4e-5 (2.2e- 5)*	-9.1e-6 (2.35e-5)	-8.7e-6 (7.8e-06)	1.2e-7(5.4e-6)
Constant	-3.5(3.4)	-125(1.e+8)	-3.3(5.289)	-1.85(4.9)	19.324	14.4(2.5)*	-0.9(2.24)	2.42(2.38)
Log likelihood	-12.892		-43.772		-50.315		-77.879	
Likelihood Ratio ( )	36.33*		34.44**		20.34		19.68	
ρ	0.585		0.282		0.168		0.112	
N	32		64		66		88	

FINDINGS

- Results showed that in zone A, household size was found to be responsible for the risk averse behaviour group an agricultural entrepreneur belongs.
- This implies that the probability of being in risk averse group relative to the risk neutral group increases as the household size increases.
- In zone B the probability of being in the risk behavioural groups relative to the reference group (risk neutral) increases as available farm land, proportion of cropped farm size, crop diversification, and amount of capital increases.
- Zones C&D are homogenous in their risk behavioural groups. Hence the agricultural entrepreneurs here tend to behave alike as groups.

Figures in parenthesis are the standard error of the estimated regression coefficients in their absolute values, \* = significant at 5% level

CONCLUSION AND RECOMMENDATIONS

This study has pointed out the socio-economic characteristics contributing to the agricultural entrepreneurs risk behaviour. Hence recommends that policy and programmes that decrease the household size such as family planning should be introduced to the agricultural entrepreneurs the more. As well policy that increases the agricultural entrepreneurs’ available farm size and their cropped land should be put in place. Furthermore policy and programmes that increase capital especially disposable asset should be encouraged. This can be enhanced by given agricultural entrepreneurs loans in form of agricultural inputs and assets rather than in liquid capital to ensure proper used. The agricultural entrepreneurs should be encouraged to make use of risk management strategies especially crop diversification and insurance. In addition policy and programmes should identify homogenous groups and should be targeted collectively through societies and cooperatives which should be made more effective to be used as tools in introduction of new innovation and programmes for such group in agriculture.