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THE IMPACT OF EXTENSION, ADVISORY AND DEVELOPMENTAL SCHEMES ON AVERAGE INCOME RECEIVED BY FCV TOBACCO FARMERS: AN EMPIRICAL STUDY FROM INDIA AND TANZANIA

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Abstract
The present study uses a sample of 400 FCV tobacco farmers from Tanzania and India to examine the impact of extension, advisory and developmental schemes on farmer's average income for the year 2014-2015. The multi-level sampling selection was used. Highly tobacco producing states and regions of India and Tanzania were considered. Descriptive statistics was done first to check the normality of data through skeweness and kurtosis for which both confirmed data normality. One-way ANOVA (SPSS 23 var) was operationalised to test the hypotheses. The study concludes that the impact of both of extension services, and advisory and developmental schemes on average income were significantly difference for FCV tobacco farmers in India and Tanzania and hence we fail to accept null hypotheses.

Keywords: FCV Tobacco, TTB, TBI, Average Income, Extension, Advisory Schemes.

1. Introduction

An all-purpose agreement is that extension services, if properly designed and implemented, improve agricultural productivity (see Romani, 2003; Evenson and Mwabu 1998; Bindlish and Evenson 1993; Birkhaeuser et al., 1991). Agricultural extension describes the services that provide rural people with the access to knowledge and information they need to increase productivity and sustainability of their production systems and consequent to improved quality of life and livelihoods (NRI, 2014). Besides Swanson (2008) contend that extension has changed over time and is currently linked to systems that facilitate the access of farmers, their organizations and other market actors to knowledge, information and technologies; facilitates their interaction with partners in research, education, agribusiness and other relevant institutions; and assist farmers to develop their own technical, organizational and management skills and practices (Chrisoplos, 2010).

Kobor (2005) describe aagricultural extension as an applied behavioral science which is used to bring about desirable changes in the behavioral complex of farming community, usually through various strategies and programmes of change and by applying latest scientific and technological innovation. Saliu et al., (2009) further explain the wider context of extension services as the rural knowledge and innovation system. Recently, Alex, Zijp and Byerlee (2002) overviewed extension systems and argue that such services are key to informing and influencing rural household decisions. Disappointingly rural areas regularly lag behind urban areas in the access to information and developing countries generally lag behind more of developed countries in this regard. Such lags jeopardize the ability of rural people to comprehend their full potential and improve their economic, social and environmental conditions.

On these connotations it can be agreeable that after being given priority by governments, extension, advisory and developmental schemes have helped communities to meet their food and agricultural business needs, with consciousness on environmental conservation, natural resource protection and development of human and social capital. This follows GFRAS (2012) who fortifies that extension services enables farmers to take innovations, improve production and protect environment. Having unclear purpose has been a contributing factor to very variable results in terms of adoption of recommended practices, increased productivity or impact on rural poverty (NRI, 2014).

Governments and individual farmers contemplate extension services as an important element within the array of market and nonmarket entities and agents that provide human capital-enhancing inputs, as well as flows of information that can improve farmers' and other rural peoples' welfare (e.g., Leonard, 1977; Garforth, 1982; Hazell and Anderson, 1984; Jarrett, 1985; Feder, Just and Zilberman, 1986; Roberts, 1989). GFRAS (2012) in their study show that there is very high rate of extension (13-500%) and that it is a cost effective way to improve productivity and income. It may therefore be associated with positive effects on knowledge, adoption, and productivity. Kedia (2003) suggest that in the history of extension, advisory and developmental scheme, the most significant development was introduction of training and visit (T&V) extension management system and which NRI (2012) refer it as innovation rather than extension. The systems are to be demand-led and actors in the agriculture innovation must be in close contact with their clients. Farmers are to be well represented and fully involved to meet their demands. Muyanga and Jayne, (2006) propound that the need for agricultural extension services provide farmers with important information, such as patterns in crop prices, new seed varieties, crop management and marketing (NRI, 2012).Besides, countries and especially small farmers are experiencing wide gaps in yields of crops at the farms of progressive and subsistence growers (Baig et al., 2009) as a result of extension services which has recently attracted debate on improving its efficacy and innovation processes (NRI, 2012).

In Pakistan context Baig et al., (2009) for example asserts that agriculture extension helps farmers (through educational procedures) in improving farming methods and techniques, increasing production efficiencies and income, bettering their levels of living and lifting the social and educational standards in rural life. This consequently has an impact on the alleviation of poverty and improved food and crop production and security. The performance of small-scale producer organizations and smallholders practising agroecological farming can be enhanced by building their capabilities, facilitating their access to financial services, improving price incentives and reducing their exposure to uninsured risks (IAASTD, 2009; World Bank, 2008). Extension service stretches farmers the exposure, which at the end increases their ability to decide on proper ways of using resources. Thus extension systems and input distribution systems are mutually reinforcing the contribution of extension to agricultural productivity growth depends on functioning input distribution systems and vice versa (eg. Muyanga and Jayne, 2006). In Kenya for example, the importance of extension system is linked to the fight against poverty and has been underscored in the Strategy to Revitalize Agriculture (SRA) (Republic of Kenya, 2004).

Empirically, extension services have gone miles on academia and practices, and there is countless evidence of positive outcomes for extension services (Muyanga and Jayne, 2006), and the households that reported using both fertilizer and hybrid maize seed registered a productivity increase of about 291 percent over the period compared to those that did not use these productivity enhancing technologies. In Pakistan, in order to stress the need of extension, the government made sure that functions of all service delivery line departments including agricultural extension were transferred from provinces to the newly elected district governments. The plan helps in reducing the bureaucratic impediments and providing people better access to the resources in all the public service departments (Baig et al, 2009).

Underscoring the importance of extension services on agricultural performance (Feder, Willett and Zijp, 2001) figured out that there are at least 800,000 official extension workers worldwide, and some 80% of the world's extension services are publicly-funded and delivered by civil servants. However, more than 90% of the world's extension personnel are located in developing countries (Umali and Schwartz, 1994) where indeed the majority of the world's farmers is located. In South Africa, extensions activities are carried out by service providers (Government and Private) and farmers through joint planning and programme implementation (Saliu et al, 2009). These combinations of public and private organizations give blend of its own taste to curb the shortage in various dimensions. In recent past, there has been contradictory observations as IPI, (2010) commend that, Central governments of most countries have reduced their direct involvement in agricultural extension. Muyanga and Jayne (2006) confirmed the contradiction as they reported the declining effectiveness of the public extension service has been identified as one among the factors impeding agricultural growth in Kenya. (Saliu et al, 2009). From a development policy perspective, the investment in extension services or the facilitation of nongovernment extension, are potentially important tools for improving agricultural productivity and increasing farmers' incomes.

FCV tobacco farmers of India and Tanzania are among consumers of extension, advisory and developmental schemes which is reportedly found to play a crucial role on quality and per yield of tobacco leaf (Muyanga and Jayne, (2006); Alex, Zijp and Byerlee (2002); Baig et al (2009); and Saliu et al, (2009) across countries. Notwithstanding the Indian and Tanzanian FCV tobacco farmers being offered aforestated services and irrespective of its reported impact on productivity (income) these farmers are still complaining on low productivity and income especially in Tanzania. On this background the empirical question of the comparative impact of extension, advisory and developmental service on the income of FCV tobacco farmers in Tanzania and India is still undressed and requires empirical scrutiny. This study is intended to partly fill this research gap and contribute to existing body of knowledge in this area. In specific terms the study responds to the following research hypotheses:

H_{01}: There is no significant statistical difference on the impacts of extension services on average income received by FCV tobacco farmers in India and Tanzania.

H_{02}: There is no significant statistical difference on the impacts of advisory and developmental schemes on average income received by FCV tobacco farmers in India and Tanzania.

The rest of this paper is organized as follows: Section 2 provides Data Source and Method Framework outlining Sample Selection and data Collection and Analysis approach. Section 3 Presents Empirical Results of the Study. This is followed by Section 4 which provides Summary, Conclusion and Implication from the present study.

2. Data and Methodology

2.1 Sample Selection and Data

Using Questionnaires the data for this study were collected from a sample of 400 participants 200 from Tanzania and 200 from India in that order. The rationale behind this selection is based on prior studies who suggest that over 300 cases is probably adequate but communalities after extraction should be above 0.5 (Arrindell and van der Ende, 1985; Velicer and Fava, 1998). Accordingly this study uses the approach consistent to prior studies of this nature to including Guilford (1954) who argued that N should be at least 200, and Cattell (1978) claimed the minimum desirable N to be 250. Comrey and Lee

(1992) offered a rough rating scale for adequate sample sizes in factor analysis: 100 = poor, 200 = fair, 300 = good, 500 = very good, 1,000 or more = excellent.

2.2 Research Approach

In order to achieve objective of the study one-way ANOVA test was applied to statistically test whether there is difference on the impact of extension, advisory and developmental schemes to the average income received by FCV tobacco farmers between India and Tanzania. The one-way ANOVA was applied through the following uptake;

$$Y_{ij} = \mu + \tau_i + \varepsilon_{ij} \text{.....(1)}$$

$$Where\ j = 1, J(\#groups) and\ i - 1, 2, 3, 4 \ldots . n_j$$

Or

$$Y_{ij} = \mu_j + \varepsilon_{ij}\ \ Where\ \mu_j = Mean\ of\ jth \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$Population = \mu + \tau_j$$

$$Hypothesis\ testing\ is\ through\ H_0: \mu_1 = \mu_2 = \mu_3 = \cdots \ldots\ldots \mu_j$$

For this purpose the data were summarised and operationalised in IBM SSPS version 23 from which statistical outputs were the bases for conclusion.

3. Empirical Results

This section presents the empirical findings regarding the impact that provision of extension, advisory and developmental services have on FCV tobacco farmers' average income for the study period 2014/15. The statistical impact of the services on the farmers' average income was examined through one-way ANOVA based on questionnaires' responses and operationalised on SPSS. The study further assessed whether the impact of the services offered to FCV tobacco farmers on their average income is statistically different between India and Tanzania. The results on descriptive statistics were first to be examined to check for normality of average income and extension schemes, and advisory and developmental schemes respectively.

3.1 The Descriptive Statistics Results for India and Tanzania

Table 1 presents descriptive statistics of variables of inquiry used for this study for both sub-samples. These were obtained after operationalising the modified income data in order to facilitate the finding of the average income of the farmers. The data were obtained through the questionnaires for which the respondents from two countries had to opt for either YES or NO. The table indicates number of dimensions although in this scenario we were interested on the skeweness and kurtosis which tests for normality of the findings. Kline (1998) suggests that all variables in the analysis for univariate skewness and kurtosis are normally distributed and falls on a satisfactory zone if it is within conventional criteria of between -3 to 3 for skewness and -10 to 10 for kurtosis. In support of this Hair et al., (2010) assert that the multivariate normality infers that the individual variable is normal in a univariate sense and that their combinations are also normal.

Table 1: Descriptive Statistics for individual Country Data

Country	Service	Response	Mean	Std. Dev	Min	Max	Kurt	Skew	N
India (USD)	Extension Services	**Yes**	7.62	0.56427	6.40	10.00	3.901	1.513	162
		No	7.38	0.41676	6.55	8.32	0.716	0.132	38
	Advisory & Dev scheme	**Yes**	7.6230	0.56915	6.40	10.00	3.713	1.497	160
		No	7.3907	0.39959	6.55	8.32	0.627	-.094	40
Tanzania (USD)	Extension Services	**Yes**	8.5	0.822331	6.80	9.71	-.765	-.018	22
		No	7.4	0.47219	6.21	8.94	0.793	0.213	178
	Advisory & Dev. Schemes	**Yes**	8.4617	0.82331	6.8	9.71	-.765	-.018	22
		No	7.3979	0.47219	6.21	8.94	0.793	0.213	178

*****All the income figures were presented in US$. Variables are defined as follows: N is the number of respondents for each category in India and Tanzania; YES is representative of positive response on those who agreed that there is extension, advisory and developmental schemes offered by Government, Agency or Private Organization to FCV tobacco farmers in India and Tanzania in that order; No indicate a negative response on those who did not agree that there is extension services offered by Government, Agency or Private Organizations for FCV tobacco farmers in India and Tanzania respectively.

The results in table 1 depict that in Indian context the values of skewness are 1.513 and kurtosis value is 3.901 for those said YES. The NO answer stood at 0.13 for skewness and 0.72 for kurtosis on availability of extension services offered by government, agency and or private organizations to FCV farmers in India. For the advisory and developmental schemes skeweness stood at 1.497 and kurtosis was 3.713 for YES answer. For NO answer the skeweness was 0.627 and kurtosis

was -0.094. Statistically these are within the acceptable dimensions as evidenced by Kline (1998). The normality distribution for Indian data is further illustrated in figure 1 and Figure 2 below.

Figure 1: Normality test results in histogram (*'YES' /'NO'*) for India's Extension Services

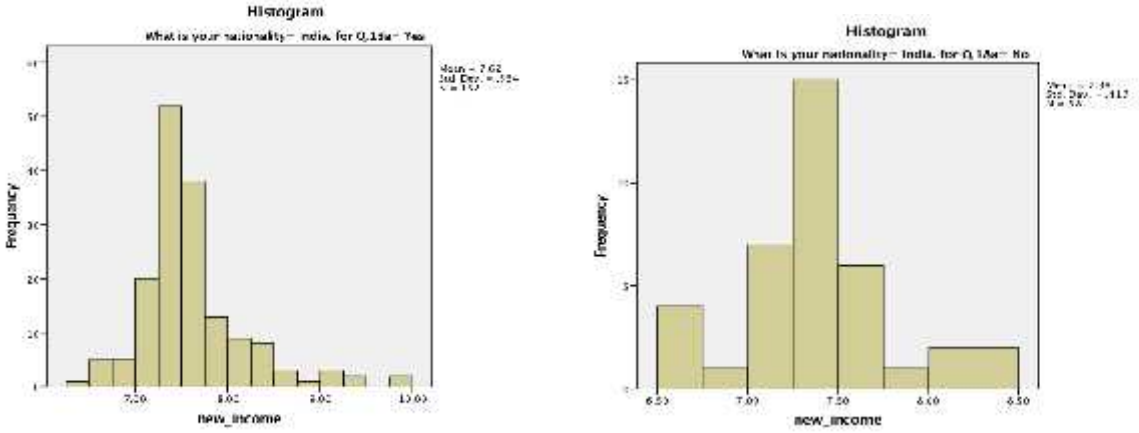
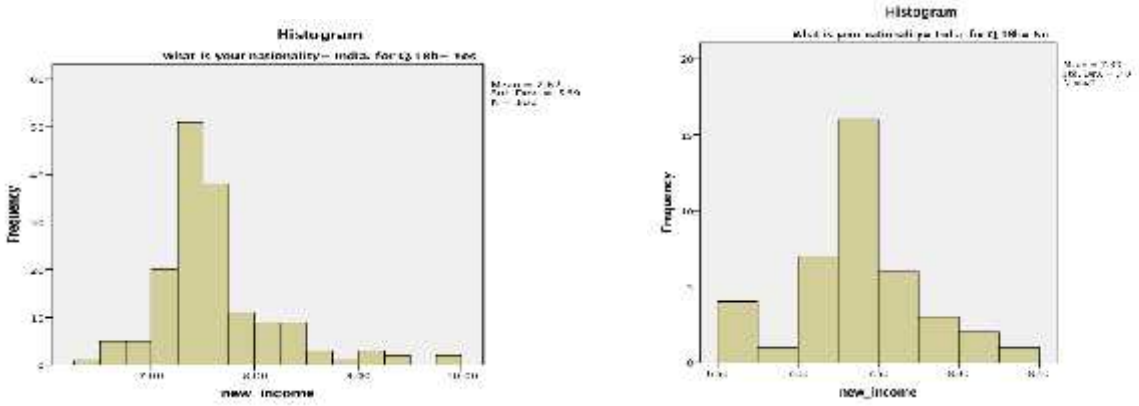


Figure 2: Normality Test Results ('YES/'NO') for India's Advisory and Dev. Schemes



In Tanzania, the results report -0.765 kurtosis and -0.018 skewness value for the YES answer and kurtosis value of 0.793 and skeweness 0.213 for extension services. For advisory and developmental schemes the values on YES were -0.765 for kurtosis and -0.018 for skweness. In addition to that the NO answer values were 0.213 and 0.793 for skeweness and kurtosis respectively. Accordingly following Kline (1998) all variables are observably statistically normally distributed. The normality of relationship between the availability of extension, advisory and development tobacco program income for 'YES' and 'NO' responses for Tanzania is illustrated by histogram (Figures 3 and 4).

Figure 3: Normality test results *('YES'/ 'NO')* for Tanzania's Extension Services

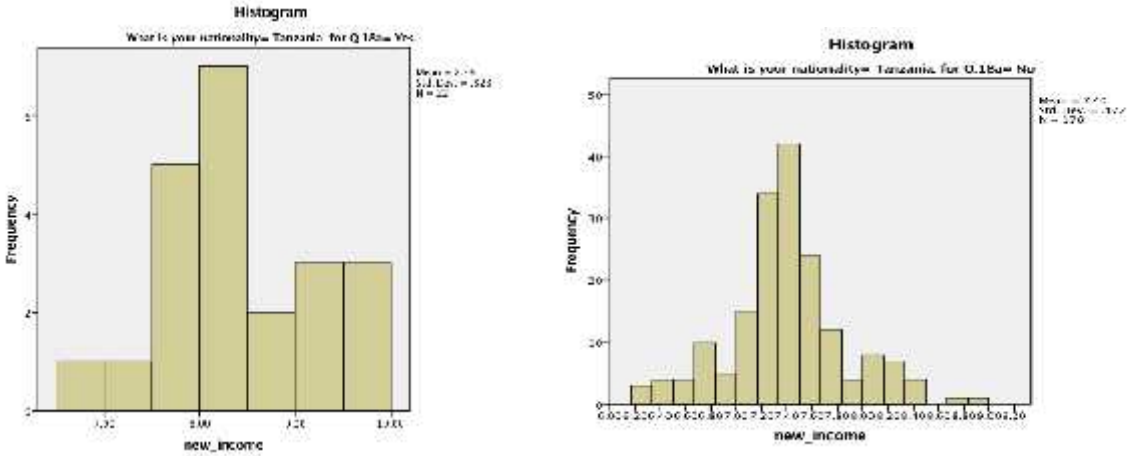
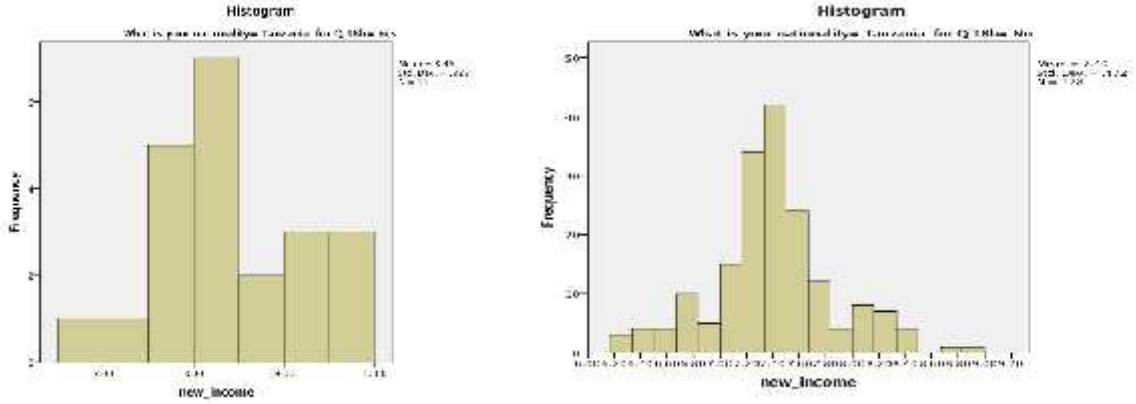


Figure 4: Normality test results *('YES'/ 'NO')* for Tanzania's Advisory and Dev. Schemes



3.2 The ANOVA Results for India and Tanzania

The one way ANOVA test was conducted to assess or determine if there is a significant statistical different of average income levels for the farmers who asserted to have received the extension, advisory and development schemes from the Governments, Agency or Private organizations and those who did not receive the services. Accordingly the section presents the ANOVA Results on the Impact of extension, advisory and developmental schemes on FCV tobacco farmers' Average income in India and Tanzania. In this purpose a hypothesis was tested, $H_{0:}$ "There is no statistical difference on the impact of extension, advisory and developmental schemes on average income received by FCV tobacco farmers in India and Tanzania". The table 2 depicts the empirical results for India and Tanzania for primary data collected for 2014/15 farming season.

Table 2: FCV tobacco Farmers average income ANOVA outputs for India and Tanzania

Country	Service	Mean Square	Error	P-Value (at 5%)
India	Extension Services	1.769	0.291	0.015
	Advisory & Dev. Schemes	1.726	0.299	0.016
Tanzania	Extension Services	22.157	0.271	0.000
	Advisory & Dev. Schemes	22.157	0.271	0.000

P-value is defined at 5% level of significance (two tailed) for India and Tanzania; Mean Square explains the degree of variance of FCV tobacco farmers' level of income dependent on availability of extension services; Error represent the average level of income unexplained by availability of extension programs in India and Tanzania.*. This is a lower bound of the true significance; b. Lilliefors Significance Correction
Source: Researcher (2017)

The interest was to break the responses variables into two groups and check if there is mean income difference between them. The above has the outcome from the statistical operation showing a p-value that is a decisive base of dictating decision about the acceptance or rejection of null hypothesis. In the literatures (eg. Frost, 2015, Biau et al, 2010) there is substantiation that if p-value is less or equal to α level, then null hypothesis (H_o) is rejected that all the means are statistically similar. In this case p- value for India on extension services is 0.015 that support the rejection of the hypothesis; and for advisory and developmental schemes the p-value reads at 0.016, which also support the rejection of null hypothesis. For Tanzania, the p-value is 0.000 to both extension services as well as advisory and developmental schemes at 5% level of significance and the null hypothesis is rejected.

It follows that we found it difficult to accept the null hypotheses and therefore it is rejected at 95% confidence level. It is thus concluded that there is statistical means difference on the impacts of extension, advisory and developmental schemes on average income received by FCV tobacco farmers in India and Tanzania.

In order to find further statistical evidence on whether the null hypotheses should be rejected or accepted, the researcher conducted a normality tests that is performed through frequency statistics. Kolmogorov-Smirnoy and Shapiro-Wilk tests are common even though there are several tests available. Monte Carlo simulation found that the Shapiro-Wilk has the best power for a given significance, followed closely by Anderson-Darling when comparing the Shapiro-Wilk, Kolmogorov, Lilliefors, and Anderson tests (Razali, 2011). Shapiro-Wilk test suggests that null-hypothesis to which the test should be to population that is normally distributed. That's if the p-value is less than the chosen alpha level (in this case 0.05 defaults),

then the null-hypothesis is rejected and there is evidence that the data set tested are not normally distributed population; in other words, the data are not normal.

Table 3 represents Shapiro-Wilk tests for India and Tanzania on whether extension services offered by government, agency or private organization to FCV tobacco farmers had any impact to mean income. For India; those answered YES had a of 0.000 for both extension and advisory and development schemes, also had 0.022 and 0.097 on those answered No on presence of the schemes, they are falling on normal ranges of Shapiro-Wilk test. For Tanzania, the interpretation is the same as for India. For those who responded YES to a question had the score of 0.331 for both extension and advisory schemes For NO answer was 0.003 to both extension and advisory and developmental schemes. All these are within the normal Shapiro-Wilk test.

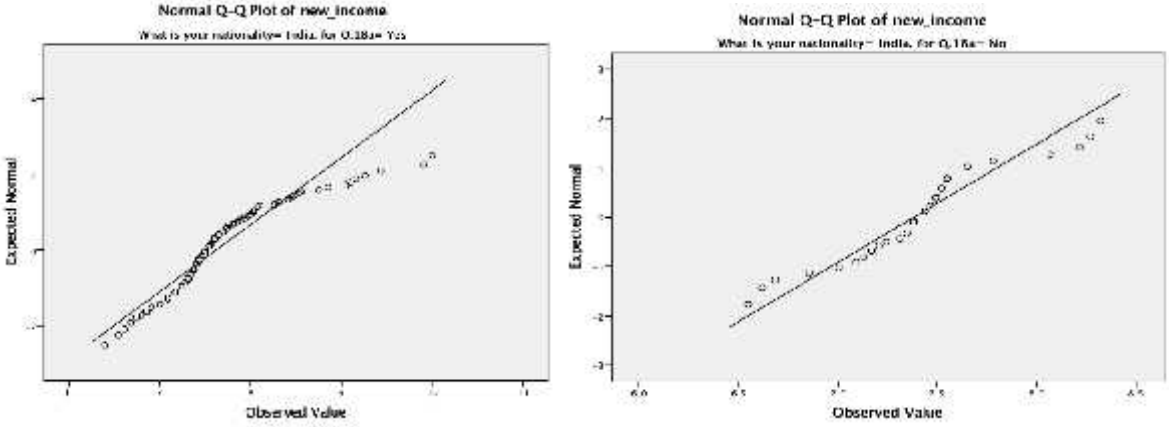
Table 3: The Normality Tests Using Kolmogorov-Smirnov and Shapiro-Wilk

Country	Services	Response	Kolmogorov-Smirnov[b]	Shapiro-Wilk	N
India	Extension Services	Yes	0.000	0.000	162
		No	0.002	0.022	38
	Advisory and Developmental Schemes	Yes	0.000	0.000	160
		No	0.033	0.097	40
Tanzania	Extension Services	Yes	0.200*	0.331	22
		No	0.001	0.003	178
	Advisory and Developmental Schemes	Yes	0.200*	0.331	22
		No	0.001	0.003	178

P-value is defined at 5% level of significance (two tailed) for India and Tanzania; Mean Square explains the degree of variance of FCV tobacco farmers' level of income dependent on availability of extension services; Error represent the average level of income unexplained by availability of extension programs in India and Tanzania.*. This is a lower bound of the true significance; b. Lilliefors Significance Correction.

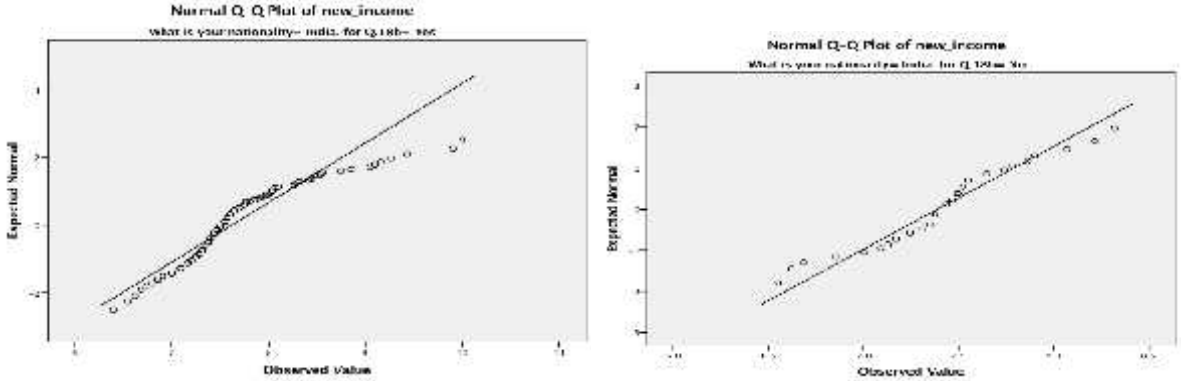
However, Field (2009) suggest that the Shapiro-Wilk test is biased by sample size and may therefore be statistically significant from a normal distribution in any large sample. In this research the sample of 400 respondents participated in the study, 200 respondents from each of the two jurisdictions India and Tanzania. In addition to Shapiro-Wilk test the Q-Q plot is required for further verification of the results. The Q-Q plot results are depicted under Figure 5, 6 and Figure 7,8 below for India and Tanzania respectively.

Figure 5: Normal Q-Q Plot of Modified Income for India's Extension Services



Q-Q Plot for India sample showing those said YES and NO for the impact of extension services offered by the government, agency or private organization to FCV tobacco farmers.

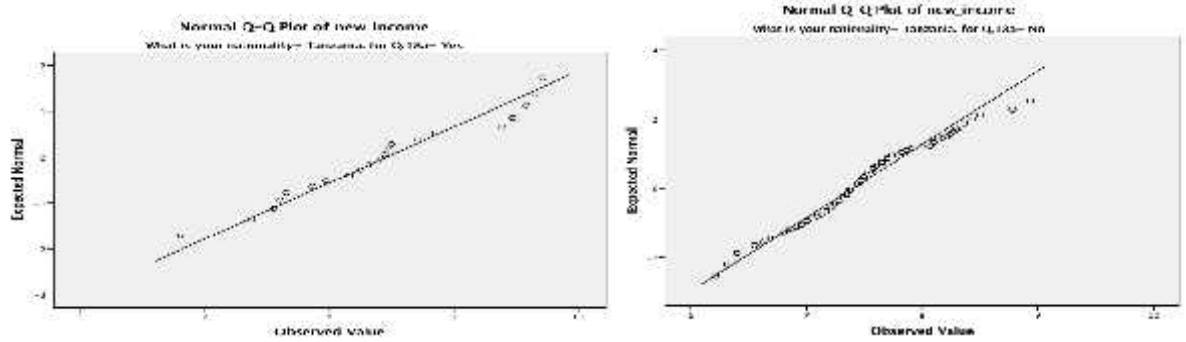
Figure 6: Normal Q-Q Plot of Modified Income for India's Advisory and Developmental Schemes



Q-Q Plot for Tanzania sample showing those said YES and NO for the impact of extension services offered by the government, agency or private organization to FCV tobacco farmers.

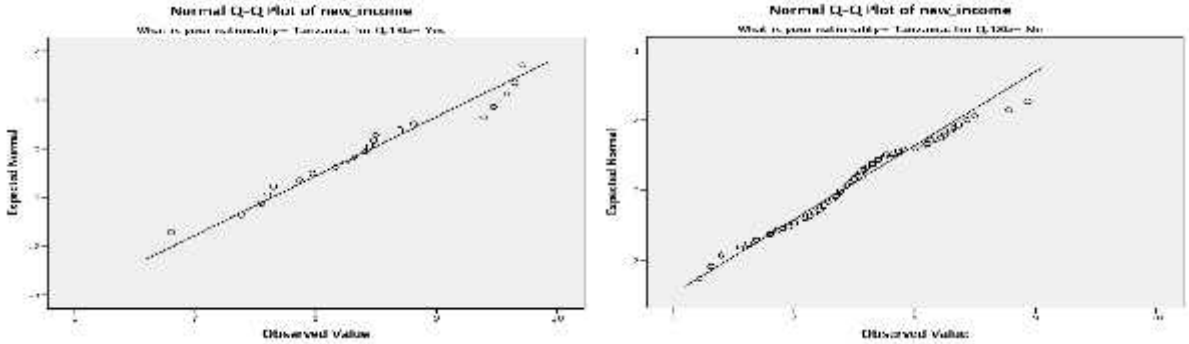
The Q-Q plot, or quantile – quantile plots are graphically presenting the conformity of statistical test operated through Shapiro-Wilk and verify that the set of data plausible came from same normal distribution of the randomly selected data. Any statistical analysis that assumes dependent variables is normally distributed and the use of a normal Q-Q plot is to check if the assumption is applicable. In this case the Q-Q plots statistically prove the normality of the data distribution. The Q-Q plot allows seeing, at glance, if the assumptions applied are plausible, and if not, how the assumption is violated and what data point contributes to the violation.

Figure 7 : Normal Q-Q Plot of Modified Income for Tanzania's Extension Services



Q-Q Plot for Tanzania sample showing those said YES and NO for the impact of extension services offered by the government, agency or private organization to FCV tobacco farmers.

Figure 8: Normal Q-Q Plot of Modified Income for Tanzania's Advisory and Developmental Schemes



Q-Q Plot for Tanzania sample showing those said YES and NO for the impact of extension services offered by the government, agency or private organization to FCV tobacco farmers.

4. Summary, Conclusion and Implications

This study intended to investigate the impact of extension, advisory and developmental schemes on average income received by FCV tobacco farmers in India and Tanzania for the farming season of 2014/15. The hypothesis developed and tested for

this purpose are **H_{01}**: There is no significant statistical difference on the impacts of extension services on average income received by FCV tobacco farmers in India and Tanzania and **H_{02}**: There is no significant statistical difference on the impacts of advisory and developmental schemes on average income received by FCV tobacco farmers in India and Tanzania. To achieve this objective we applied one-way ANOVA test operationalised in SPSS Version 23. The section provides the empirical results on the impact of the schemes on average income received by the FCV tobacco farmers in two jurisdictions of India and Tanzania.

The statistical evidence from the study found that it was difficult to accept null hypothesis, as there is significant difference on average income as an impact of extension services between the two groups of India and Tanzania. The researcher also had to reject hypothesis two from the same objective since the results reported a significant statistical difference on impacts caused by advisory and developmental schemes on average income received by the two groups of India and Tanzania.

The empirical evidence shows that the use of extension, advisory and development schemes have the impact on average income received by FCV tobacco farmers of the both countries such that those who received the services had relatively higher average income. This is another signal to both countries that any extension, advisory and developmental schemes presented to farmers have the positive outcomes to their individual income and general economics of corresponding countries and can have a substantial contribution on farmer's poverty reduction.

References

1. Field, Andy (2009). Discovering statistics using SPSS (3rd ed.). Los Angeles [i.e. Thousand Oaks, Calif.]: SAGE Publications. p. 143. ISBN 978-1-84787-906-6.
2. Razali, Nornadiah; Wah, Yap Bee (2011). "Power comparisons of Shapiro–Wilk, Kolmogorov–Smirnov, Lilliefors and Anderson–Darling tests" (PDF). *Journal of Statistical Modeling and Analytics*. **2** (1): 21–33. Retrieved 30 March 2017.
3. Hanyani-Mlambo, B.T (2002) Strengthening The Pluralistic Agricultural Extension System; a Zimbabwean Case Study, *Agricultural Research Council (ARC*)
4. Bindlish, V. &Evenson, R. (1997) Evaluation of the Performance T&V Extension in Africa; The Experience of Kenya and Burkina Faso. *World Bank Research Observer* 12 (2, 1997): 183-201.
5. Kandlero, C. (2017) Hope for Tobacco Growers in Extension Services, March 8, 2017, Blantyre, Malawi. www.times.mw/hope-for-tobacco-growers-in-extension-services-2/ Retrieved on 11th April 2017.
6. Owens, T., Hoddinott, J., and Kinsey, B (2001) The Impact of Agricultural Extension on Farm Production in Resettlement Areas of Zimbabwe. WPS/2001-6
7. Rossel, S., (2017) Brazilian Leaf Volumes are Set To Recovery After Last Years Unusual Small Harvest, Bouncing Back, Tobacco Reporter: Specom, 1st March, 2017 www.tobaccoreporter.com/2017/03/bouncing-back/ Retrieved on 11th April 2017.
8. GFRAS (2012) Fact Sheet on Extension Services, Position Paper: June 2012 www.g-fras.org
9. Kedia, O., (2003). Extension Services – Key to Agricultural Growth, DPR (Agriculture), PIB, New Delhi
10. NRI (2014). Agriculture Extension, Advisory Services and Innovation, University of Greenwich, http://caran.nri.org Retrieved on 24th May 2017 2121HRS (+5 UTC)
11. Christoplos, I. (2010) Mobilising the Potential of Rural and Agricultural Extension. Neuchatel Group.
12. Swanson, B.E. (2008) Global Review of Good Agricultural Extension and Advisory Services Practices. Rome: FAO.
13. Kobor, R., (2005) Agricultural Extension: Its Role in National Development, Modern Ghana, http://www.modernghana.com/news/118522/agricultural-extension-its-role-in-national-development/ Retrieved on 25th May 2017 0043 HRS
14. Birkhaeuser, D., R. Evenson and G. Feder. 1991. The economic impact of agricultural extension: a review.. Economic Development and Cultural Change 39 (3): 507-521
15. Bindlish, Vishva, and Robert E. Evenson. 1993. Evaluation of the Performance of T& V Extension in Kenya. World Bank Technical Paper No. 208, Africa Technical Department Series, World Bank, Washington, D.C.
16. Evenson, R. and G. Mwabu. 1998. The effects of Agricultural Extension on Farm Yields in Kenya. Economic Growth Center Discussion Paper No. 798. Yale University. New Haven
17. Romani, Mattia. 2003. The impact of extension services in times of crisis: Côte d.Ivoire 1997- 2000. Centre for the Study of African Economies, University of Oxford. CSAE WPS/2003-07.
18. Baig, M. Z., Al-Subaiee, F. S., and Straquadine, G. S (2009). Role of Agriculture Extension in Sustainable Rural Development in Pakistan, LUCRARI STIINTIFICE, SERIA 1, VOL.XI (1).

19. Hazell, P.B.R. and Anderson, J.R. (1984), "Public Policy toward Technical Change in Agriculture", Greek Economic Review 6(3), 453-82.
20. Garforth, C. (1982), "Reaching the Rural Poor: A Review of Extension Strategies and Methods".
21. In G.E. Jones and M.J. Rolls, (eds.), Progress in Rural Extension and Community Development, Vol. 1, Wiley, New York, pp. 43-69.
22. Feder, G. and Slade, R.H. (1986), "Methodological Issues in the Evaluation of Extension", In G.E. Jones (ed.), Investing in Rural Extension: Strategies and Goals, Elsevier Applied Science, London, pp. 255-66.
23. Jarrett, F.G. (1985), "Sources and Models of Agricultural Innovation in Developed and Developing Countries", Agricultural Administration 18, 217-34.
24. Anderson, J. R., and Feder, G., (2003) Rural Extension Services; Agriculture and Rural Development Department: World Bank Policy Research Working Paper 2976, February 2003.
25. Leonard, D.K. (1977), Reaching the Peasant Farmer: Organization Theory and Practice in Kenya, University of Chicago Press, Chicago.
26. Roberts, N. (ed.) (1989), Agricultural Extension in Africa, A World Bank Symposium, World Bank, Washington, DC.
27. Saliu, J. O., Obinne, P. C., and Audu, S. I (2009) Trends in Agricultural Extension Services in Africa: Options for New Approach; Journal of Agricultural Extension and Rural Development Vol. 1 (3) pp. 071-076 December 2009 http://www.academicjournals.org/jaerd.
28. Feder, G., Willett, A. and Zijp, W. (2001), "Agricultural Extension: Generic Challenges and the Ingredients for Solutions", In S. Wolf and D. Zilberman (eds.), Knowledge Generation and Technical Change: Institutional Innovation in Agriculture, Kluwer, Boston, pp. 313-56.
29. Alex, G., Zijp, W. and Byerlee, D. with input from the AKIS Thematic Team, (2002), Rural Extension and Advisory Services: New Directions, Rural Development Strategy Background Paper # 9, ARD, World Bank, Washington, DC.
30. Frost, J., (2015) Understanding Hypothesis Tests: Significance Levels (Alpha) and P-Values in Statistics. The Minitab Blog.
31. Biau, D. J., Jolles, B. M., and Porcher, R. (2010) P-Value and Theory of Hypothesis Testing: An Explanation for New Researcher; Clin Orthop Relat Res (2010) Springer, Volume 468, Number 3, March 2010.
32. IAASTD (2009). Agriculture at Crossroads. Washington, DC, Island Press.
33. World Bank (2008). World Bank Report 2008: Agriculture for Development. Washington, DC. Available at: http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/0.contentMDK: 23062293-pagePK478093-piPK: 477627-thesitePK: 477624,00.html.