# *Applied Tropical Agriculture*

## CONTENT ANALYSIS OF STUDENT'S RESEARCH PROJECTS IN THE DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION, THE FEDERAL UNIVERSITY OF TECHHOLOGY, AKURE

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**Abstract**

*This study used the content analytical approach to review students' research theses that were submitted to the Department of Agricultural Economics and Extension, Federal University of Technology, Akure. The study was directed at identifying the research tendencies in the department with respect to enterprises studied, research focus, method of data collection and analytical tools used. The study revealed that 34.51% of the students' research works were on crop enterprises while 11.94% were on livestock. The predominant crop enterprises studied were cocoa, cassava, yam and rice while poultry was the predominant livestock enterprise studied. About 29.68% of the research efforts were focussed production, 29.35% on adoption and 21.61% on marketing. Questionnaire administration was used by 84.52% of the student researchers as the main method of data collection while personal interview was used by 11.61% of them. Farm experiments served as the source of data for only 0.97% of the student researchers. Multiple analytical tools were used to achieve the research objectives with those who used two and three tools accounting for 49.4% and 32.3%; respectively. Descriptive statistics; especially frequency distribution was the first and main tool of analysis used by 88.06% of the student researchers. About 8.06% of them used regression analysis as the first and main tool of analysis.*

**Key words:** Content analysis, student research, agricultural economics extension FUTA Nigeria

**Introduction**

Agricultural information system is a system in which information pertaining to agricultural activities are generated, transformed, transferred, consolidated, received and fed back in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Roling, 1988). In this system, research plays key roles in the generation, transformation and consolidation of agricultural information. Agricultural research is thus key to agricultural development. In Nigeria, agricultural research is carried out principally by 15 National Agricultural Research Institutes (NARIs) (ARCN, 2008). Each of the institutes has national mandate for research on specific crops, area or sub-sector. In addition, five of these have zonal responsibilities with respect to on-farm research and technology transfer to farmers through the Agricultural Development Projects (ADP). The various faculties of Agriculture in federal, state and private universities also undertake agricultural research. It is within this later agricultural research framework that the students' research projects in the Department of Agricultural Economics and Extension, Federal University of Technology, Akure can be situated.

The analysis of research content and documentation of outcome of research is important for various reasons, among which is the need to know the agricultural problems that have been researched, the outcome of such researches for the purpose of communication to end users of the research outcomes, chief which include farmers and policy makers. Equally, more important is the need to minimize the duplication of research efforts and to optimize the use of research resources. It is for these reasons that the objective of the desk study was set as the review and content analysis of students' research thesis in the Department of Agricultural Economics and Extension, Federal University of Technology, Akure (FUTA). The study aims to identify the various enterprises that have been studied and the intensity of study as indicated by the number of student researchers that have studied them, the research focus of the various student researchers, method of data collection and the analytical tools used.

## Methodology
### Sources of data

The study analyzed the theses submitted to the Agricultural Economics and Extension, FUTA, for the Bachelor of Technology, Post Graduate Diploma, Master of Technology and Doctor of Philosophy degrees for the period 1997 to 2006. Altogether, a total of 310 theses were covered in the study. About 61.61% of the projects are for the Bachelor of Technology in Agricultural Economics and Extension, 25.81% are for Post Graduate Diploma, 25.81% are for Masters of Technology and 8.7% are for the Doctor of Philosophy (Table 1). The theses reviewed were all obtained from the library of the Department of Agricultural Economics and Extension, FUTA

**Table 1.** Distribution of students' theses by type of degree

| Type of Degree | Frequency | Percent |
|---|---|---|
| Bachelor of Technology | 191 | 61.6 |
| Post Graduate Diploma | 80 | 25.8 |
| Masters of Technology | 28 | 9.0 |
| Doctor of Philosophy | 11 | 3.5 |
| Total | 310 | 100.0 |

Source: Author's computation, 2008

The Department of Agricultural Economics and Extension comprises two main options, Economics and Extension, in which students can specialize. The distribution of the students' theses by option in which the students specialize is presented in Table 2. The table shows that about 68.1 % of the students specialized in the Economics Option while 31.9% specialized in the Extension Option.

**Table 2. Distribution of students' theses area of specialization**

| Specialization | Frequency | Percent |
|---|---|---|
| Economics | 211 | 68.1 |
| Extension | 99 | 31.9 |
| Total | 310 | 100.0 |

Source: Author's computation, 2008

### Content Analysis

The main analytical approach used in this study is content analysis. Content analysis is carried to determine the presence of certain concept within texts or sets of texts. Researchers qualify and analyze the presence of meaning and relationships of such words and concepts, then make inference about the message within the texts, the writers, the audience and even the culture and time of which these are part. Text, in a single study, may represent a variety of different types of occurrence (Carley, and. Palmquist, 1992; Lissack, 1998). Content analysis is a systematic replicate technique for compressing many words of text into fewer content categories based on explicit rules of coding (Berelson, 1952; USGAO, 1996; Kripppendorf 2004; and Weber, 1990). Holsti (1969), defines content analysis broadly as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages". Content analysis enables researchers to sift through large volume of data with relative ease in a systematic fashion (USGAO, 1991). It can be used to analyze and describe the focus of individual group, institutional or social attention (Weber, 1990). To this extent, the content analysis of students' research theses in the Department of Agricultural Economics and Extension, FUTA will provide an insight into the research focus of the students in the department and possibly that of their supervisors, if we assume that students conduct researches along the research interests of their supervisors.

In carrying out content analysis, inputs available in machine-readable text, is analyzed for frequencies and coded into categories for building inferences. For the inferences to be valid, it is important that the classification procedure must be consistent (Weber, 1990).

For the purpose of this study, the unit of analysis from which inputs are drawn is the individual student's research report. The content of each report was summarized and coded under ten headings; namely Identification, Name, Matriculation Number, Title, Specialization, Focus, Keywords, Key Findings, Method of Data Collection and Analytical Tools used. The output of the coding was initially entered into a spreadsheet before being exported to the statistical package for analysis. The analytical tool used is descriptive statistics comprising mainly frequency distribution, cross tabulation and Pearson's chi square statistic. The chi-square was used as test for independence between degree option (economics and extension) and research focus with a view to ascertaining if there is a clear distinction of student researchers in the two degree options.

The chi-square test statistic is defined as:

$$T = \sum_i \frac{(o_i - e_i)^2}{e_i}$$

Where $o_i$ is the observed frequency for a given cell and $e_i$ is the expected frequency for a given cell. The expected frequency is the row total times the column total divided by the grand total. The test statistic is compared to a chi-square distribution with $(r-1)(c-1)$ degrees of freedom where r is the number of rows and c is the number of columns.

## Results and Discussion
### Enterprises Studied

The enterprises the students studied can be broadly classified into crop, livestock, fisheries and "others". Table 3 presents the distribution of the students' theses by enterprises studied. The theses which focused on crop enterprises accounted for 34.51% while those that focused on fisheries and livestock accounted for 2.90% and 11.94%, respectively. About 50.65% of the projects focused on research problems that are not distinctly related to crop, fisheries or livestock. The predominance of crop enterprises over livestock and fisheries is a reflection of the dominance of crop enterprises in the agriculture of the catchment states of the Federal University of Technology, Akure.

**Table 3.** Distribution of students' theses by enterprise studied

| Enterprise Studied | Frequency | Percent |
|---|---|---|
| Crop | 107 | 34.51 |
| Livestock | 37 | 11.94 |
| Fisheries | 9 | 2.9 |
| Others | 157 | 50.65 |
| Total | 310 | 100.0 |

Source: Author's computation, 2008

A further analysis of the crop enterprises studied is presented in Table 4. The table shows the predominant crop enterprises studied are cocoa (27.10%), cassava (15.89%), yam (8.41%) and rice (8.41%). This distribution is also a reflection of the important crops in the university's catchment area. Cocoa, the most studied crop, is the most important cash crop in Ondo, Ekiti and Osun states.

**Table 4.** Distribution of students' theses by crop enterprise studied

| Crop Enterprise Studied | Frequency | Percent |
|---|---|---|
| Cocoa | 29 | 27.10 |
| Rice | 9 | 8.41 |
| Cassava | 17 | 15.89 |
| Yam | 9 | 8.41 |
| Maize | 5 | 4.67 |
| Oil palm | 5 | 4.67 |
| Kolanut | 6 | 5.61 |
| Forest and Forest Products | 6 | 5.61 |
| Others | 21 | 19.63 |
| Total | 310 | 100.0 |

Source: Author's computation, 2008

Table 5 presents the further analysis of the livestock enterprise studied. The table shows that the most frequently studied livestock enterprise was poultry (51.35%). This was followed by goat (13.51%) and bee (10.81%). The predominance of poultry in the research projects compared to other livestock enterprises is also a reflection of the spread of poultry enterprise in the southwest Nigeria and especially in Ondo State compared to other livestock enterprises.

The results on enterprises studied seem to align the market realities in Ondo State. These are the predominant enterprises in terms of market demand in the State.

**Table 5.** Distribution of students' theses by livestock enterprise studied

| Livestock Enterprise Studied | Frequency | Percent |
|---|---|---|
| Bee | 4 | 10.81 |
| Cattle | 2 | 5.41 |
| Rabbit | 1 | 2.70 |
| Swine | 3 | 8.11 |
| Snail | 2 | 5.41 |
| Goat | 5 | 13.51 |
| Grass cutter | 1 | 2.70 |
| Poultry | 19 | 51.35 |
| Total | 37 | 100.00 |

Source: Author's computation, 2008

*Research Focus*

Table 6 presents the distribution of student thesis by area of focus. The table shows that adoption accounted for 29.35%, credit and cooperative accounted for 10.97%, marketing 21.61%, production 29.68%, employment and income 4.84%, poverty and economic policy has 1.94% and others accounted for 1.61%. The results show that most of the students and, probably their supervisors as well focused their research works on production and adoption related problems of agriculture. Marketing of agricultural products also received significant attention. The focusing of research efforts on production and adoption issues is probably the result of attempts made at addressing the perceived low level of productivity of the Nigeria agriculture; more especially as it relates to identifying the causes of low productivity and factors that determine the level of adoption of improved technologies.

**Table 6.** Distribution of students' theses by research focus

| Focus | Frequency | Percentage |
|---|---|---|
| Adoption | 91 | 29.35 |
| Credit and cooperatives | 34 | 10.97 |
| Marketing | 67 | 21.61 |
| Production | 92 | 29.68 |
| Employment and Income | 15 | 4.84 |
| Poverty and economy policy | 6 | 1.94 |
| Others | 5 | 1.61 |
| **Total** | **310** | **100** |

Source: Author's computation, 2008

*Method of Data Collection*

It was found that the student researchers in some instances used more than one data collection methods. The data collection methods used were categorized into major and minor data collection methods. The major data collection method was taken to be one used to gather the bulk of the data used to achieve the research objectives.

Table 7 below shows the distribution of students' theses by major and minor data collection methods. The table shows that 33.55% of the student researchers did not have a minor data collection method. The predominant major method used for collecting data was questionnaire administration with 84.52%. This was followed by personal interview with 11.61%. Farm experiment as a major method of generating data for student research accounted for less than one percent. The predominant minor method used for collection data for the student research projects was desk review with 58.06%.

**Table 7.** Distribution of students' theses by method of data collection

| Method of data collection | Major | | Minor | |
|---|---|---|---|---|
| | Frequency | Percent | Frequency | Percent |
| Desk review | 9 | 2.90 | 180 | 58.06 |
| Farm experiment | 3 | 0.97 | 2 | 0.65 |
| Personal interview | 36 | 11.61 | 11 | 3.55 |
| Questionnaire administration | 262 | 84.52 | 13 | 4.19 |
| None | 0 | 0.00 | 104 | 33.55 |
| **Total** | 310 | 100.00 | 310 | 100.00 |

Source: Author's computation, 2008

*Analytical Tools Used*

Most of the student researchers used more than one analytical tool to address their research objectives. Table 8 shows the distribution of the students' theses by the number of analytical tools used. The table shows that 49.4% of the students used two analytical tools while 32.3% used three analytical tools to accomplish their research objectives. About 6.8% used four tools while only 0.3% and 11.3% used one and five tools; respectively.

**Table 8.** Distribution of students' theses by number of analytical tools used

| Number of tools used | Frequency | Percent |
|---|---|---|
| 1 | 35 | 11.3 |
| 2 | 153 | 49.4 |
| 3 | 100 | 32.3 |
| 4 | 21 | 6.8 |
| 5 | 1 | 0.3 |
| Total | 310 | 100.0 |

Source: Author's computation, 2008

The analytical tools used were categorized into major and minor analytical tools. The major tool was taken to be the one used to achieve the critical research objectives Table 9 shows the distribution of student thesis by major and minor data analytical tools used. The table shows that 66.13% of the student researchers did not have a minor analytical tool. The predominant major analytical tool used for addressing research objectives was descriptive statistics with 88.06%. This was followed by regression analysis with 8.06 %. Other tools used were correlation coefficient, gross margin analysis and Leontief analysis, which recorded less than two percent.
. The predominant analytical tool used to achieve the research objectives was regression analysis with 23.55%. There were several instances in which other analytical tools were used which could neither be classified as the major nor minor analytical tool from the perspective of the research objectives even though they contributed to the attainment of the objectives. The gross margin analysis was a typical example. In most research projects, which were classified into production research focus, the gross margin analysis was carried before utilizing regression analysis to deepen the analysis towards the attainment of the research objectives. The various types of regression analysis used include linear multiple regression, binary and multinomial logistic and probit regression analyses. Classified under the descriptives are frequency distributions, cross tabulation as well as measures of central tendencies and dispersion.

**Table 9.** Distribution of students' theses by analytical tools used

| Analytical tools used | Major Frequency | Minor Percent | Frequency | Percent |
|---|---|---|---|---|
| Descriptive statistics | 273 | 88.06 | 14 | 4.52 |
| Regression analysis | 25 | 8.06 | 73 | 23.55 |
| Correlation coefficient | 5 | 1.61 | 15 | 4.84 |
| Gross margin analysis | 5 | 1.61 | 2 | 0.65 |
| Leontief analysis | 2 | 0.65 | 0 | 0.00 |
| ANOVA | 0 | 0.00 | 1 | 0.32 |
| None | 0 | 0.00 | 205 | 66.13 |
| **Total** | 310 | 100.00 | 310 | 100.00 |

Source: Author's computation, 2008

*Analysis of Research Focus by Specialization/Degree Option*

There are two major specializations or degree options in the Department of Agricultural Economics and Extension, FUTA. These are the Economics and the Extension options. To identify the research focus tendencies among student researchers in the two options a cross-tabulation of research focus by specialization/degree option was carried out. The outcome of the cross-tabulation is presented in Table 10. The table shows that the predominant number of student researchers with research focus on adoption, extension programme, women in agriculture and poverty were in the extension option. They accounted for 84.6%, 80.0%, 100.0% and 66.7% of the research works done in this research focus areas; respectively. The predominant number of student researchers with research focus on cooperatives, credit, marketing and production were in the economics option. They accounted for 83.3%, 88.9%, 93.8% and 96.3% of the research works done in this research focus areas; respectively.

**Table 10.** Cross-tabulation of focus of research with specialization/degree option

| Focus Of Research | Specialization/Degree Option | | Total |
| | Economics | Extension | |
|---|---|---|---|
| Poverty | 100.0% | 100.0% | |
| Adoption | 15.4% | 84.6% | 100.0% |
| Cooperatives | 83.3% | 16.7% | 100.0% |
| Credit | 88.9% | 11.1% | 100.0% |
| Extension programme | 20.0% | 80.0% | 100.0% |
| Marketing | 93.8% | 6.2% | 100.0% |
| Poverty | 50.0% | 50.0% | 100.0% |
| Production | 96.3% | 3.8% | 100.0% |
| Women in agric | | 100.0% | 100.0% |
| Others | 63.6% | 36.4% | 100.0 |
| Total | 68.1% | 31.9% | 100.0% |

Source: Author's computation, 2008

To ascertain if the observed research focus tendencies are significant, a test of independence between research focus and specialization/degree option was carried out. The following hypotheses were tested.

HO: There is no relationship between research focus and specialization/degree option

HA: There is relationship between research focus and specialization/degree option The

Pearson Chi-square statistic output for the test is presented as follows.

**Table 11.** Chi-Square Tests

| | Value | df | Asymp. Sig.(2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 158.147 | 9 | .000 |
| Likelihood Ratio | 170.649 | 9 | .000 |
| N of Valid Cases | 310 | | |

The table indicates a chi-square of 158.147, with 9 degrees of freedom, which is significant at least at the 5% level. Thus we reject the null hypothesis and conclude that there is a significant relationship between research focus and specialization/degree option.

**Conclusion**

The thirteen years of students' research covered by the study have produced a concentration of research efforts on crops (especially cocoa, cassava, yam and rice) and poultry (a livestock enterprise) in alignment with market realities in Ondo State and Southwest of Nigeria in general. The focusing of research efforts on production and adoption issues also reflects the perceived low level of productivity of the Nigeria agriculture and hence the need to identify the causes of low productivity and factors that determine the level of adoption of improved technologies.

The predominant method of data collection was found to be questionnaire administration. Farm experiments played insignificant role in the generation of the research data used by the students. While questionnaire administration is quick and cheap, it cannot be used to generate reliable data that are required to assess the economic viability of (new) technologies which emerge from the research efforts of other agricultural researchers who have taken economic factors into consideration in design of their experiments. The Department should therefore find a way of encouraging research works that are also based on farm experiments which should be directed at testing the technologies being recommended to farmers in line with current economic realities. The dominance of descriptive statistics; especially frequency distribution as the first tool of analysis is a reflection of the method used for generating the data; namely questionnaire administration.

The Department may need to break new grounds in research efforts that are directed at finding ways of transiting the Nigerian agriculture from smallholder subsistence agriculture into (medium-scale) commercial agriculture. This would require efforts directed at land tenure systems, re-engineering production cooperatives (probably into modern partnerships and limited liability companies that can access investment capital easily) and development of farm management tools for the medium-scale farms that should succeed the smallholder subsistence farms. This will be in line with the present efforts of Government to support commercial agriculture.

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